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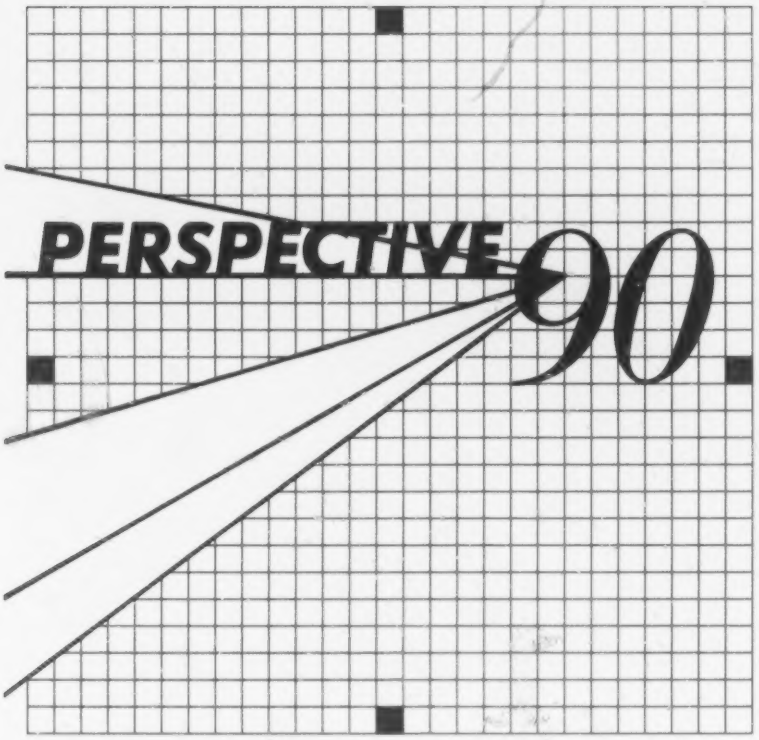

The Present and the Future of the
North American Forms Manufacturing Industry

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International Business Forms Industries, Inc.

PERSPECTIVE 90

Perspective, the annual market research publication from International Business Forms Industries, Inc. (IBFI), addresses the most important issues facing forms manufacturers and suppliers to the industry, and identifies and monitors industry trends to a degree unmatched by any other publication serving the forms industry. Based on the IBFI database of information extending back over 20 years, Perspective is prepared at the direction of the IBFI Economic and Market Research Committee. Perspective provides a comprehensive five-year forecast and reviews the previous year's performance.

The authors are responsible for all of the estimates and opinions in this volume. All charts and graphs are the work of the authors. Every effort has been made to ensure accuracy, but, of course, it cannot be guaranteed.

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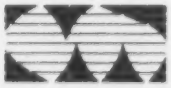

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PREFACE

The analysis and conclusions presented in *Perspective 90* are based upon IBFI's ongoing surveys—monthly and quarterly—of its forms manufacturing members in the U.S. and Canada.

These surveys track industry sales, tonnage converted, distribution channels, capacity utilization, prices paid for forms bond, paper inventory levels, gross and net profit margins, and other items relating to business conditions in the North American forms marketplace. By combining this primary research data with information available from other sources, such as other trade associations, the Bureau of Labor Statistics, and the U.S. Census Bureau, IBFI is able to provide an "insider's" 'perspective' on the forms industry—one that is uniquely available from IBFI.

Perspective 90 can be used to verify or test marketing plans for individual forms companies; as an orientation tool for new employees who need to acquire a basic understanding of the dynamics of the forms industry; and by suppliers and others interested in the changes that are constantly reshaping the face of the forms industry in North America.

EXECUTIVE SUMMARY

1990 saw the forms industry enter a new era of competition. Throughout most of the previous decade, one segment of the industry was experiencing soft demand, while another was booming. Thus, forms manufacturers could reasonably adopt a "Let's wait it out" attitude when sales were off, counting on the cyclical nature of the market to revive them.

Then, in the fourth quarter of 1989, a slack in demand hit the forms industry and continued through the first half of 1990. This period, which was also marked by fierce price competition, forced many forms manufacturers to abandon the "Wait it out" attitude and undertake the painful, but necessary, process of re-examining their strategic direction.

IBFI estimates that real growth for the U.S. forms industry in 1989 was 2.9 percent, barely ahead of real GNP growth of 2.5 percent for the overall economy. In 1990, IBFI estimates the forms industry will experience real growth of just 1.8 percent. Table 1 forecasts business forms demand through 1994.

Paper industry developments of importance during 1989 and 1990 focused less on prices and more on industry restructuring. Forms bond prices were very soft throughout most of 1989 and 1990, following a three-year period (1986-1988) in which forms bond prices increased dramatically. The first quarter of 1990 marked a burst of merger and acquistion activity among some of the major paper mills—indicating that in the future, forms manufacturers may be dealing with fewer and better focused paper suppliers than in the past.

On the technology front in 1989-90, there was nothing introduced in the office automation market that could be termed as having a revolutionary impact on forms demand. In the printer market, the biggest news was probably the availability of desktop laser printers priced below $1,000—giving a further boost to the already booming cutsheet market. The technical trend among computer hardware and software suppliers has become one of co-operation. This sector is leaning more toward offering products that can be integrated with products of competitors and other suppliers—i.e., a customer-oriented selling strategy as opposed to the computer industry's traditional product-driven strategy. Leading-edge forms manufacturers have already adopted such a strategy.

TABLE 1
U.S. Business Forms Sales, 1989-1994
(in millions of 1989 dollars at shipment values)

PRODUCT	1989	1990*	1991*	1992*	1993*	1994*
Custom Continuous	3,621	3,697	3,782	3,876	3,969	4,068
Stock Continuous	1,940	2,001	2,069	2,153	2,236	2,318
Unit Sets	1,782	1,773	1,742	1,736	1,718	1,706
Salesbooks/Pegboard	369	376	388	404	423	446
TOTAL	7,712	7,847	7,981	8,169	8,346	8,538

* Forecast

Source: IBFI

FORMS INDUSTRY PERFORMANCE REVIEW AND FORECAST

Through the first eight months of 1990, the U.S. forms industry experienced its most difficult period since the years 1973-1975, which were characterized by paper shortages, skyrocketing inflation and a recessionary economy.

Since then, forms manufacturers have seen and coped with numerous changes in the economy and in the markets they serve, such as laser printers, new distribution channels, electronic data interchange, and the emergence of a global economy.

In 1990, as in 1974, the world finds itself dealing with a Mideast political crisis that threatens the world's oil supply. Just as the 1973-74 oil embargo led to a series of structural changes in the world economy, it is quite possible that the 1990 oil crisis, which began with Iraq's invasion of Kuwait on August 2, 1990, will mark the end of an era in the global economy. Sadat of Egypt, who invaded Israel in the October 1973 Yom Kippur War that led to the Arab oil embargo of Western nations, and Hussein of Iraq may be seen as bookends for this era in the world economic history. One achieved fame as a peacemaker before being assassinated, while the other's fate—and that of the entire Mideast region—is yet to be decided.

Forms manufacturers should heed the lesson from the global economic and political events of 1989-90 and apply it to their own industry. That lesson, in a nutshell, is as follows: "The world has truly changed: What worked before, may not necessarily work now."

In 1989, the business forms industry enjoyed a respite from a three-year rise in paper prices that covered the years 1986 through 1988, when forms bond prices rose an average of 9 percent per year. In many other respects, 1989 was a year of calm before the storm. The industry figuratively caught its breath in preparation for the rigors of competing in the forms industry of the 1990s.

Perhaps the most significant news for forms manufacturers during 1989 occurred *outside* the forms industry, with the announcement from Georgia-Pacific of a takeover bid for Great Northern Nekoosa. This takeover, not officially consummated until mid-1990, was the first non-friendly takeover of one paper company by another in the industry's history.

The takeover of Northern Nekoosa was followed in 1990 by Willamette Industries' acquisition of Penntech Papers, by the announcement that B.A.T. Industries p.l.c. (BAT) would divest Appleton Papers to later merge with Wiggins-Teape of the United Kingdom, and the August 1990 announcement by Frye Copysystems that it had acquired American Tara, thus reducing the number of major American producers of carbon paper from three to two firms; and by James River's announcement that it is selling two of its paper mills in the Eastern United States.

For forms manufacturers, the message from these acquisitions and other announcements is clear: in the 1990s, there will be fewer suppliers of forms bond, which should translate into less dramatic swings in capacity rates among paper mills.

Forms manufacturers should keep this long view in mind as they observe the 1989-90 drop in forms bond prices, which fell 7.1 percent from June 1989 to June 1990. See Figure 1.

Producer Prices and Operating Rates

Producer prices for forms manufacturers declined by about 1.0 percent over the 12-month period ending in June 1990. See Figure 2. Softness in the overall economy, overcapacity among forms manufacturers, and the falling price of forms bond caused this decline.

Figure 3 compares changes in operating capacity rates among forms manufacturers versus capacity rates for the overall manufacturing sector of the U.S. economy. It shows that operating rates fell in both the forms industry and in the overall manufacturing sector, but both the variance and the magnitude of the slippage were greater in the forms manufacturing sector.

Figures 4 and 5 provide additional data on capacity utilization rates by U.S. forms companies. Data for these figures were obtained from IBFI's Business Conditions Survey, a quarterly survey of North American forms manufacturers in which an average of 45 companies, representing 95 forms plants, participated each quarter.

FIGURE 1
Business Forms Producer Price Index
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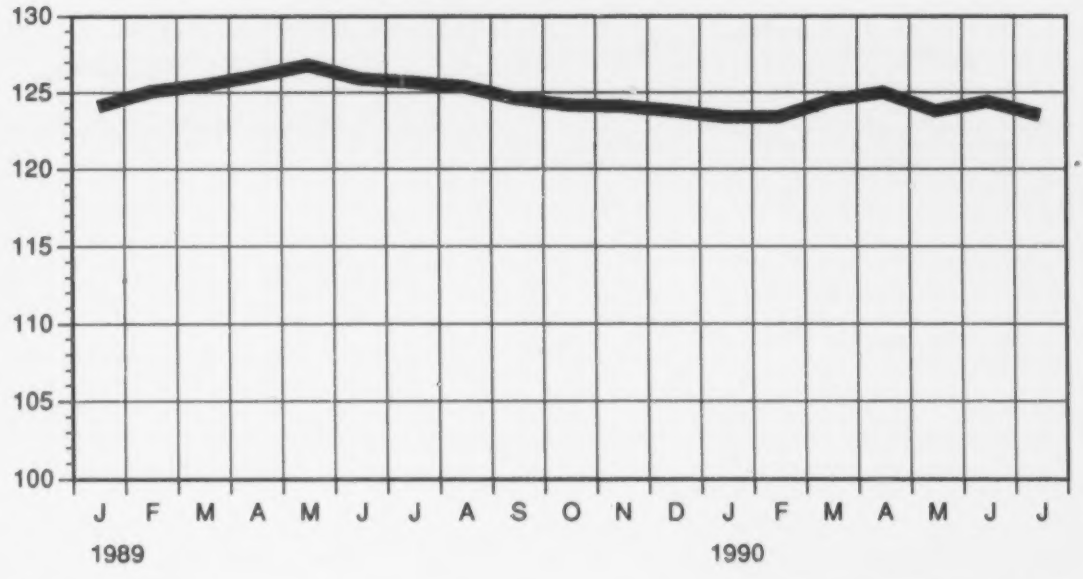
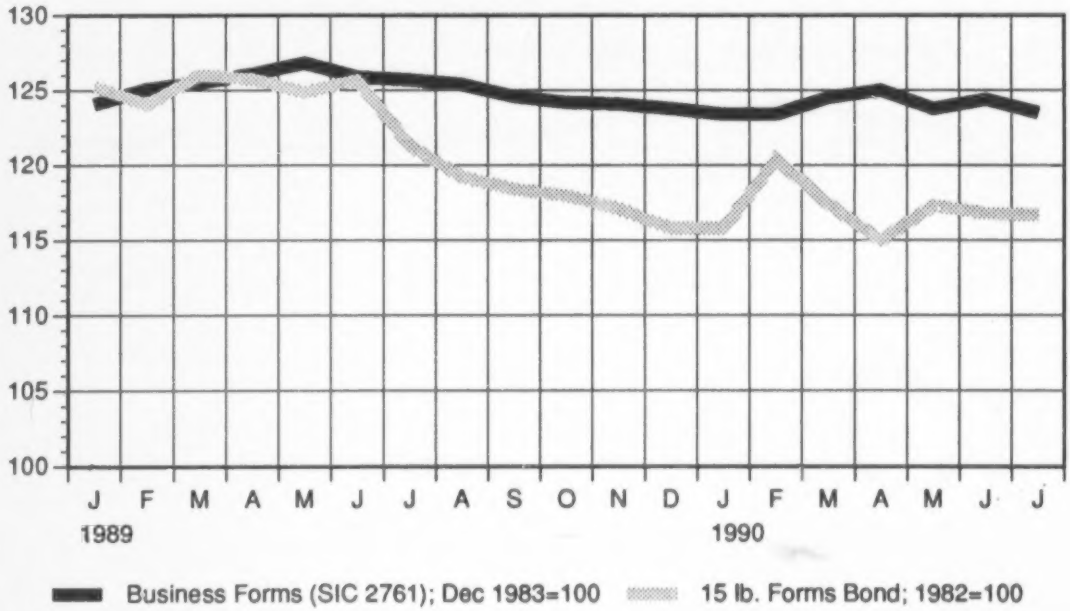


Dec. 1983=100

Source: Bureau of Labor Statistics

FIGURE 2

Producer Price Indices for 15lb Forms Bond vs. Business Forms

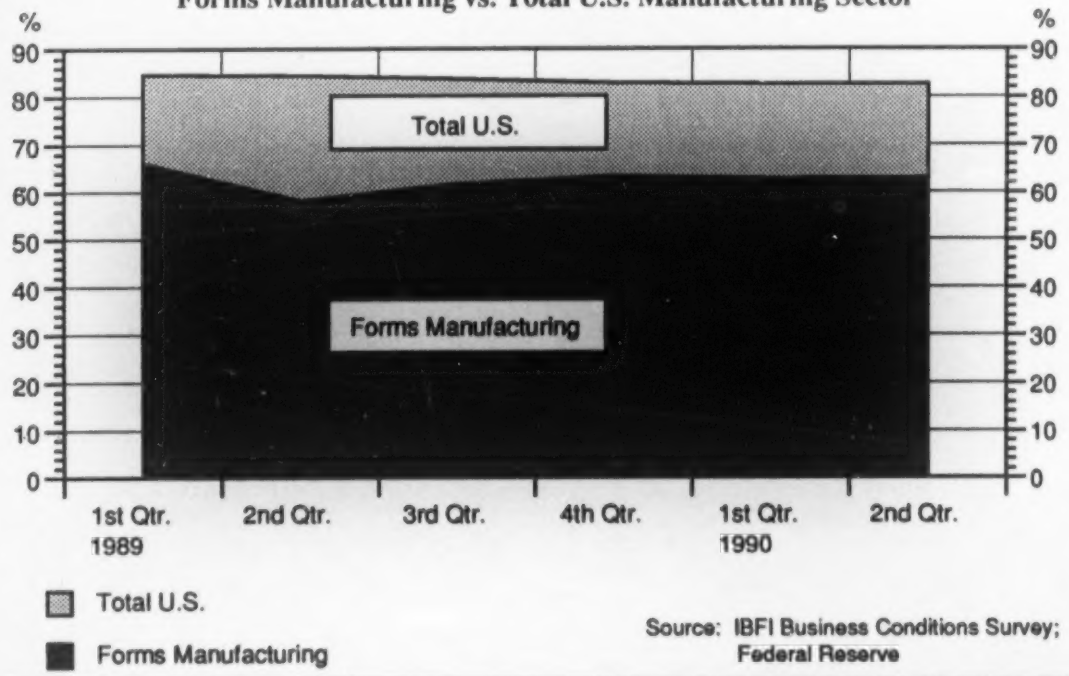


Source: Bureau of Labor Statistics

FIGURE 3

Capacity Utilization

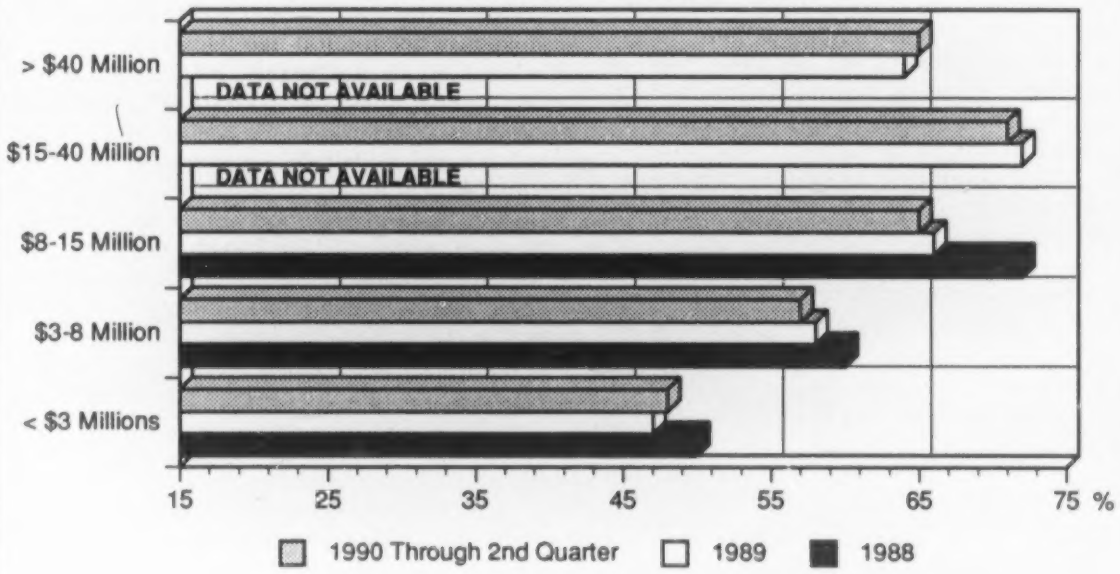
Forms Manufacturing vs. Total U.S. Manufacturing Sector



Source: IBFI Business Conditions Survey; Federal Reserve

FIGURE 4

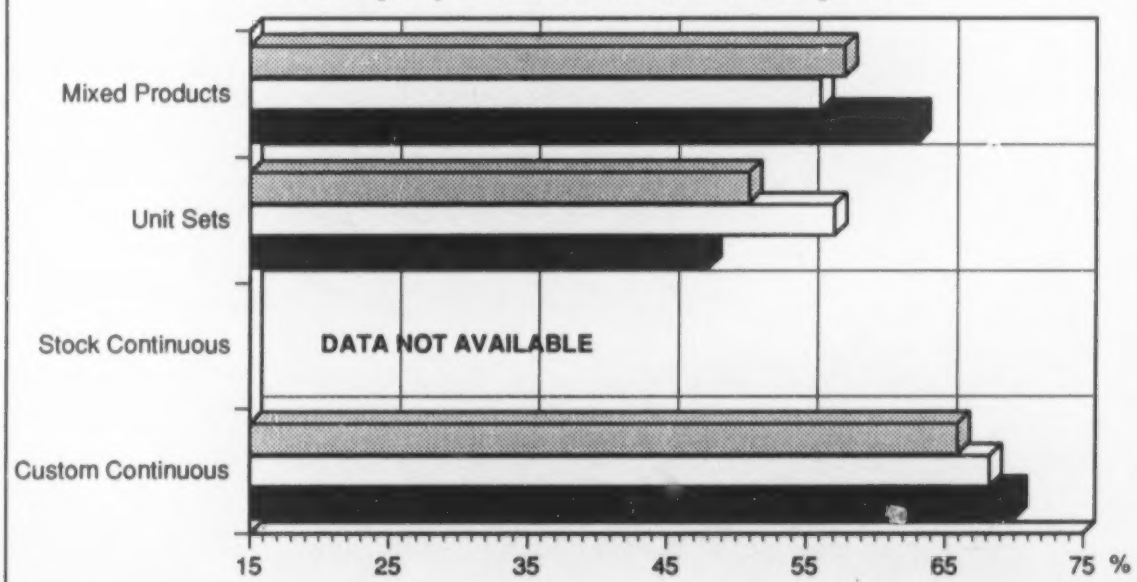
Median Capacity Utilization by Company Size
Standard Capacity Utilization: 120 Hours/Week per Press



Source: IBFI Business Conditions Survey

FIGURE 5

Median Capacity Utilization by Primary Product
Standard Capacity Utilization: 120 Hours /Week per Press



Source: IBFI Business Conditions Survey

Distribution and Profitability

In a maturing industry, a key objective for any company is to maximize its influence over its distribution channels. This is important because, as gross margins become tighter (symptomatic of maturity), the producing company has less and less opportunity to retain profits in the manufacturing and selling process. Every product eventually becomes a commodity, no matter how sophisticated its design or manufacturing process.

In such an environment, a company's distribution system can definitely provide a sustainable competitive advantage. If a company can be the first to succeed in using a particular channel, it can effectively block other competitors from entering that channel, until the market shifts and new channels open up.

The number of forms industry distribution channels increased dramatically during the 1980s. The driving force behind this development was the rapid growth of the short-run forms market, which virtually overnight created a new class of forms end-users. To reach these new end-users—few of whom were professional forms buyers—required the development of innovative marketing strategies by an industry dominated by manufacturing.

A related facet in the forms industry's changing distribution channels has been the end users' increased demand for faster delivery times. Figure 6 shows that average order backlogs for forms manufacturers participating in IBFI's quarterly Business Conditions Survey has decreased by 23 percent since 1985.

A comparison of forms industry distribution channels from 15 years ago—circa 1975—with those of today would reveal the following: (a) the number of distribution channels has increased dramatically and (b) the role of the forms distributor also has changed enormously. Ten or 15 years ago, the typical forms distributor was very much an extension of the forms manufacturer, well-trained in the industry's terminology and customs. Today, the average distributor may also be selling a variety of other office products and is apt to require substantial training by forms manufacturers in order to sell today's higher value-added forms. Plus, today's forms distributor, linked by fax and toll-free telephone lines to a wide network of potential forms suppliers, can easily obtain multiple price quotes on any forms order.

For forms manufacturers committed to selling forms strictly through distributors, the bottom line impact of the distribution trends described above has been telling. Figure 7 compares the profitability of distributor-based manufacturers vs. direct-selling forms manufacturers since 1985. It shows that average pre-tax returns among direct selling IBFI Business Conditions Survey participants increased by 78 percent from 1985 to 1989; pre-tax returns among survey participants who sell through distributors decreased by 36 percent over the same time period.

Figures 8 and 9 present data showing gross profit per press hour—by company size and distribution channel—for the period beginning with the first quarter in 1989 through the second quarter of 1990.

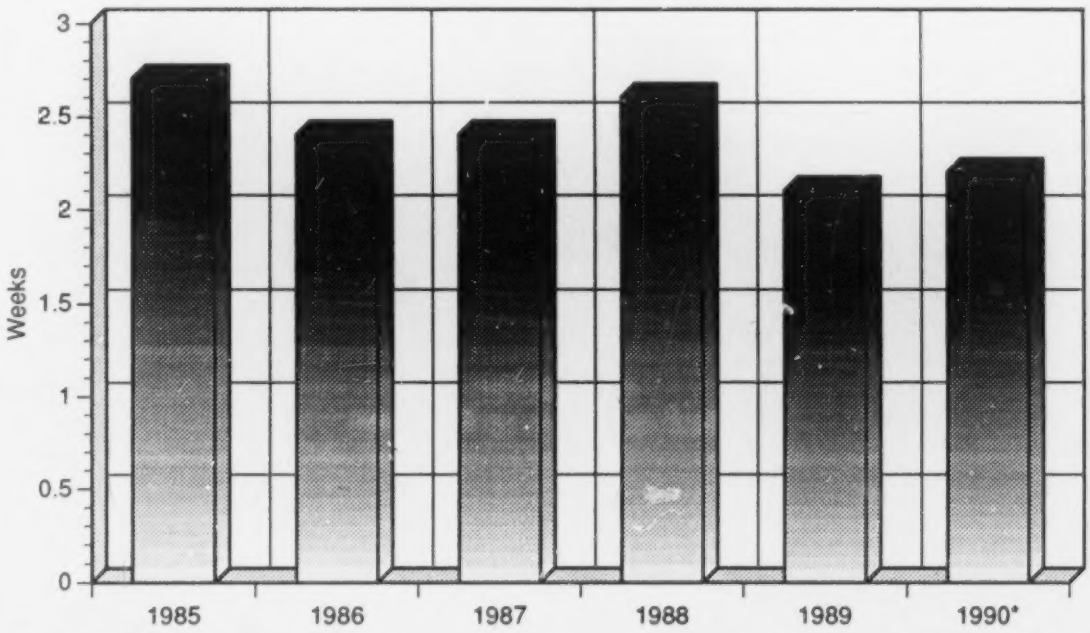
Appendix B provides historical data on forms industry profitability for the years 1980-89.

U.S. Business Forms Forecast

Tables 2 and 3 provide the IBFI five-year forecast of real growth for the forms industry by major product lines. This forecast depicts an industry that will have reached maturity by 1993. From that point on, it will no longer be safe to assume that forms industry growth will automatically outpace the growth of the overall U.S. economy.

This forecast assumes the U.S. economy will experience a mild recession in late 1990 and early 1991. Projected real GNP growth over the forecast period is shown in Table 4.

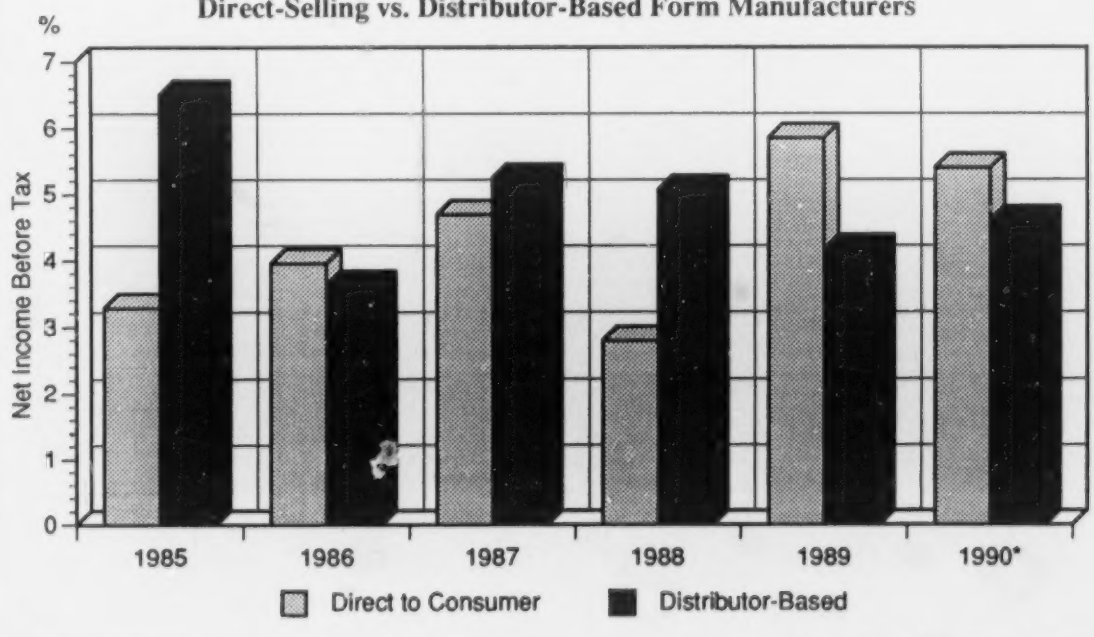
FIGURE 6
Average Weeks of Order Backlog



*Through 2nd Quarter

Source: IBFI Business Conditions Survey

FIGURE 7
Average Return on Net Income for Direct-Selling vs. Distributor-Based Form Manufacturers

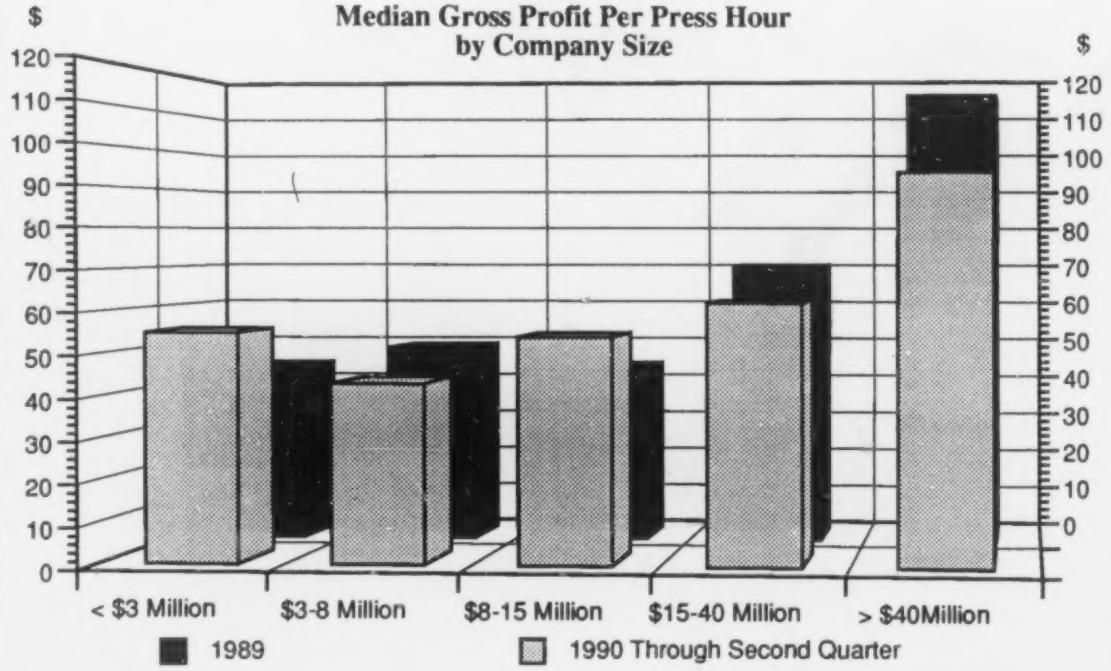


*Through 2nd Quarter

Source: IBFI Business Conditions Survey

FIGURE 8

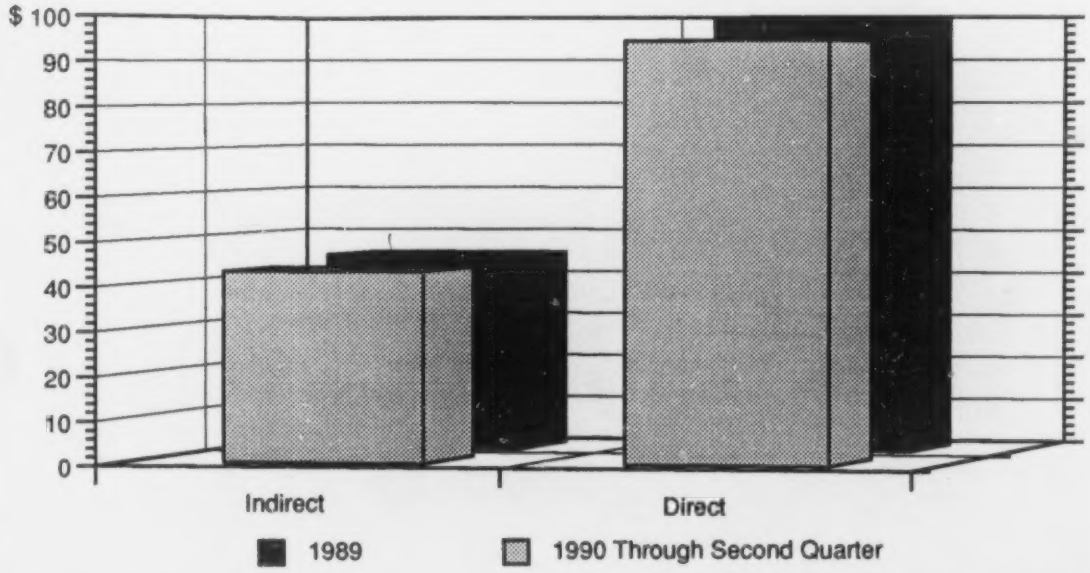
Median Gross Profit Per Press Hour by Company Size



Source: IBFI Business Conditions Survey

FIGURE 9

Median Gross Profit Per Press Hour by Distribution Channel



Source: IBFI Business Conditions Survey

TABLE 2
U.S. Business Forms Sales, 1989-1994
(in millions of 1989 dollars at shipment values)

PRODUCT	1989	1990*	1991*	1992*	1993*	1994*
Custom Continuous	3,621	3,697	3,782	3,876	3,969	4,068
Stock Continuous	1,940	2,001	2,069	2,153	2,236	2,318
Unit Sets	1,782	1,773	1,742	1,736	1,718	1,706
Salesbooks/Pegboard	369	376	388	404	423	446
TOTAL	7,712	7,847	7,981	8,169	8,346	8,538

* Forecast

Source: IBFI

TABLE 3
U.S. Business Forms Sales
Year-to-Year Percent Change
(Real Growth)

PRODUCT	1989-90	1990-91	1991-92	1992-93	1993-94
Custom Continuous	2.1	2.3	2.5	2.4	2.5
Stock Continuous	3.1	3.4	4.1	3.9	3.7
Unit Sets	-0.5	-1.7	-0.3	-1.0	-0.7
Salesbooks/Pegboard	1.9	3.2	4.1	4.7	5.4
TOTAL	1.8	1.7	2.4	2.2	2.3

Source: IBFI

TABLE 4
U.S. Economic Forecast
Projected Real GNP Growth

Year	Growth Rate
1990	1.1%
1991	1.3%
1992	2.1%
1993	2.3%
1994	2.6%

Source: IBFI

THE ECONOMIC REVIEW AND OUTLOOK

Certain months in the history of the 20th century require no further explanation as to their significance: August 1914, September 1939, and August 1945. The key question now facing the world is whether August 1990 is about to be added to this list of months that changed the world.

The conventional wisdom in the early weeks of the Iraqi oil crisis was that a shooting war would quickly break out in the Middle East and that Saddam Hussein, leader of Iraq, would either be quickly deposed or would draw the United States and other Western nations into a protracted armed conflict that would endanger the oil production capacity of the entire region.

The stock market reacted in dramatic, but predictable, fashion to the Mideast crisis, with the Dow Jones Industrial Average (DJIA) falling approximately 400 points in a matter of weeks. This drop in stock prices followed an earlier rally in the stock market that left the DJIA just below the 3000 mark in July. The fact that most economic indicators were either flat or negative during this stock market rally undoubtedly contributed to the market's steep drop following Iraq's invasion of Kuwait.

In the other major reaction to the Mideast crisis, world oil prices immediately skyrocketed—jumping from $18 per barrel to over $30 per barrel by mid-August.

The impact of higher oil prices will undoubtedly be felt by every industrialized nation in the form of higher inflation and lower GNP growth. The question is not if there will be an impact, but how great an impact. The answer to this question will be determined by how well the oil consuming and producing nations have learned two painful lessons since the first oil embargo in 1973-74.

The first of these is that, above a certain level, oil prices discourage consumption and encourage the development of alternative energy sources. Recognition of this iron law of economics clearly accounted for the decision by OPEC countries (led by Saudi Arabia) to boost oil production in order to make up for the lost capacity caused by the United Nations-approved embargo on Iraqi oil shipments and the shutdown of Kuwait's production capacity.

Although real oil prices fell by more than 50 percent during the decade of the 1980s, it is not in the long-term interest of the OPEC nations for oil prices to climb much above $30 per barrel. Their decision to raise output following the invasion of Kuwait confirms their acceptance of this fact. Therefore, it is likely that the 1990 oil crisis will *not* lead to a paralyzing bout of inflation for the U.S. economy in 1991—especially when the Federal Reserve Board Chairman, Alan Greenspan, remains firmly committed to fighting inflation as opposed to stimulating the economy via lower interest rates. Unless the Federal Reserve changes course and loosens the money supply, inflation in 1990 will be 1.0 percent higher than it would have been without the rise in oil prices.

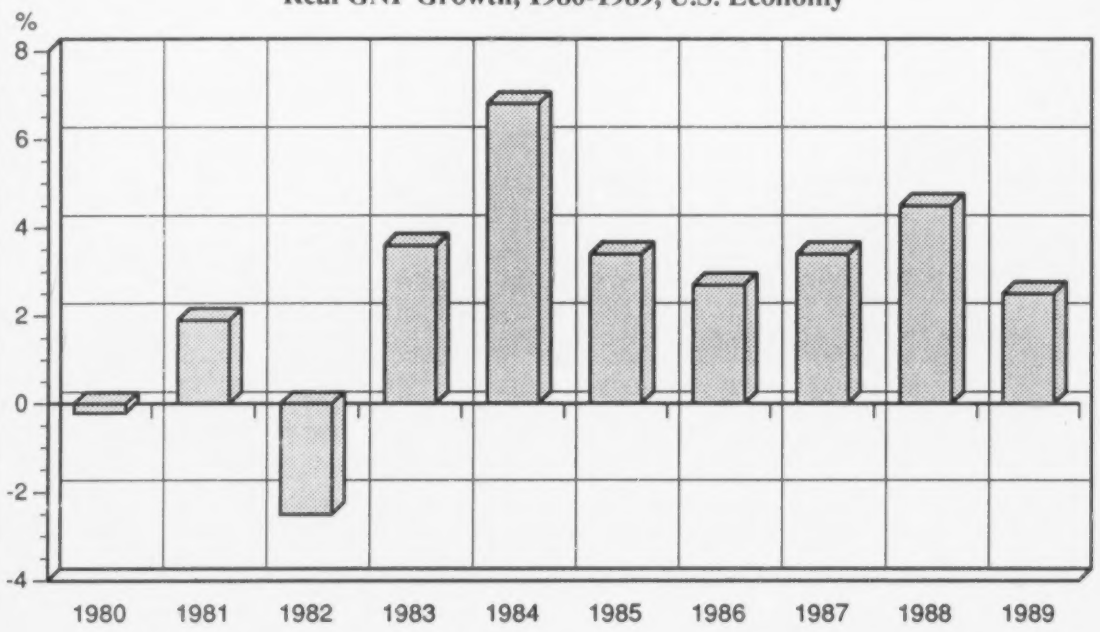
The second key lesson is that, during the 1980s, Western economies learned that operating under conditions of high interest rates is preferable to high inflation rates. They discovered that stable inflation rates and high interest rates can produce steady, if unspectacular, economic growth. For this reason, the central banks of the United States, Germany or other Western powers will probably not pump up their money supply to compensate for the rise in oil prices. In the 1970s, this practice, combined with energy price controls, led to shortages of gasoline and heating oil and double-digit inflation in the United States.

Overall real economic growth in the United States in 1991 will probably decline by 0.2-0.3 percent in 1991 as a result of higher oil prices. In short, assuming the dramatic events in the Mideast during August 1990 do not result in a conflagration, the oil price shock of 1990 seems destined to have a greater political impact than an economic one. Events in the Mideast over the final remaining months of 1990 will help to spell out the shape of the world order in the post-cold war era.

Even before the invasion of Kuwait, the words on the lips of every economic analyst during the summer of 1990 were the same: Is the expansion dead?

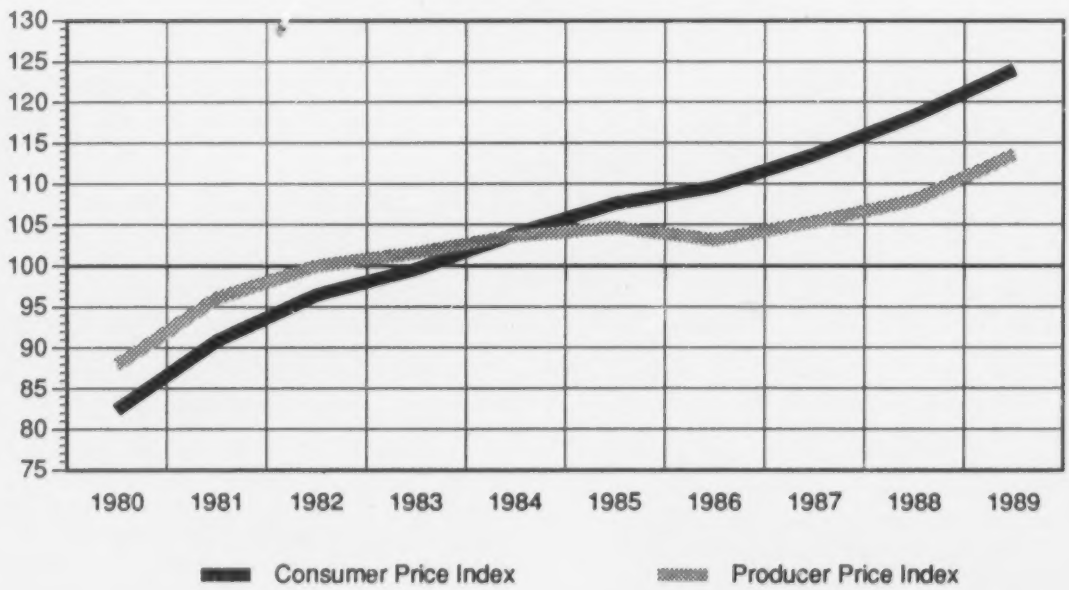
During 1989, the U.S. economy grew at an annual real growth rate of 2.5 percent, marking the economy's seventh consecutive year of expansion. See Figure 10. This remarkable economic performance, however, masks the reality that the

FIGURE 10
Real GNP Growth, 1980-1989, U.S. Economy



Source: Department of Commerce

FIGURE 11
Consumer and Producer Price Indices, 1980-1989



Source: Bureau of Labor Statistics; 1982=100

United States does not have a national economy anymore, save from a statistical viewpoint. Rather, the United States consists of several regional economies, all of which have experienced at least one cycle of recession and recovery during the last 10 years. For instance:

- The Northeast region of the country began the decade mired in a deep recession, enjoyed a huge boom in the mid-1980s fueled by high technology and financial services, and then slumped into a recession in 1988-89, with the region's financial and high technology sectors experiencing huge job losses.
- The Southwest, also known as the oil patch, roared out of the 1982 recession and experienced a boom in the mid-80's before oil prices collapsed in 1986, sending the region into a tailspin from which it's still recovering. For many of the states in this region, the August 1990 rise in oil prices came not a second too soon.

Similar stories could be told about the other regions of the country, from the Farm Belt to the Pacific Northwest. The only variance from one story to the next is the magnitude of the boom-bust cycle and the specific cause of the region's economic woes or fortune.

In short, the expansion of the U.S. economy since November 1982 does not equate to a rising tide which lifts all ships. It simply means that, in aggregate, the nation's total output of goods and services has increased every year. Specifically, during the 1980s:

- The economy produced a net increase of 18.5 million jobs
- The unemployment rate peaked at 9.5 percent in 1982, falling to a low of 5.2 percent by December 1989; by August 1990 it had risen to 5.6 percent.
- A host of new industries were either hatched or revolutionized during the decade, including personal computers, desktop publishing systems, fax machines, cellular phones, compact discs, videocassette recorders, and cable television. Ten years ago, none of these products existed in the form in which we now know them. Why did they spring up in the 1980s and not before? Advances in technology are only part of the reason. The other reasons have to do with changes in the macroeconomic environment. For instance, consider the following structural changes that occurred during the 1980s:
- The top marginal federal income tax rate was reduced by over 50 percent
- Consumer price inflation averaged 5.3 percent in the 1980s, vs. 7.1 percent in the 1970s. See Figure 11.
- Real interest rates (nominal interest rate minus inflation) averaged 6.72 percent in the 1980s, vs. 1.02 percent in the 1970s.

These three changes in the macro-economic environment had the combined effect of unleashing enormous amounts of entrepeneurial energies during the eighties. This produced a shifting of investments out of collectibles (gold, wine, Treasury bills, etc.) and into income-producing ventures. It also attracted huge amounts of foreign capital for investment in United States-based enterprises, as high interest rates lead to an inflow of capital.

As the U.S. economy moves into the 1990s, the relationship between tax policy and the economy's level of performance requires careful monitoring. Witness Congress's refusal in the fall of 1989 to lower the capital gains tax—and the explosion of bills and laws that constitute hidden taxes on businesses and consumers—such as the Clean Air Act and the Americans with Disabilities Act.

In fact, an April 1990 survey of the National Association of Business Economists found that 45 percent of the economists surveyed said that federal environmental and safety regulations are a major concern for their firm or industry. Indeed, 25 percent of the economists surveyed said such regulations are the greatest government policy issue facing their company or industry.

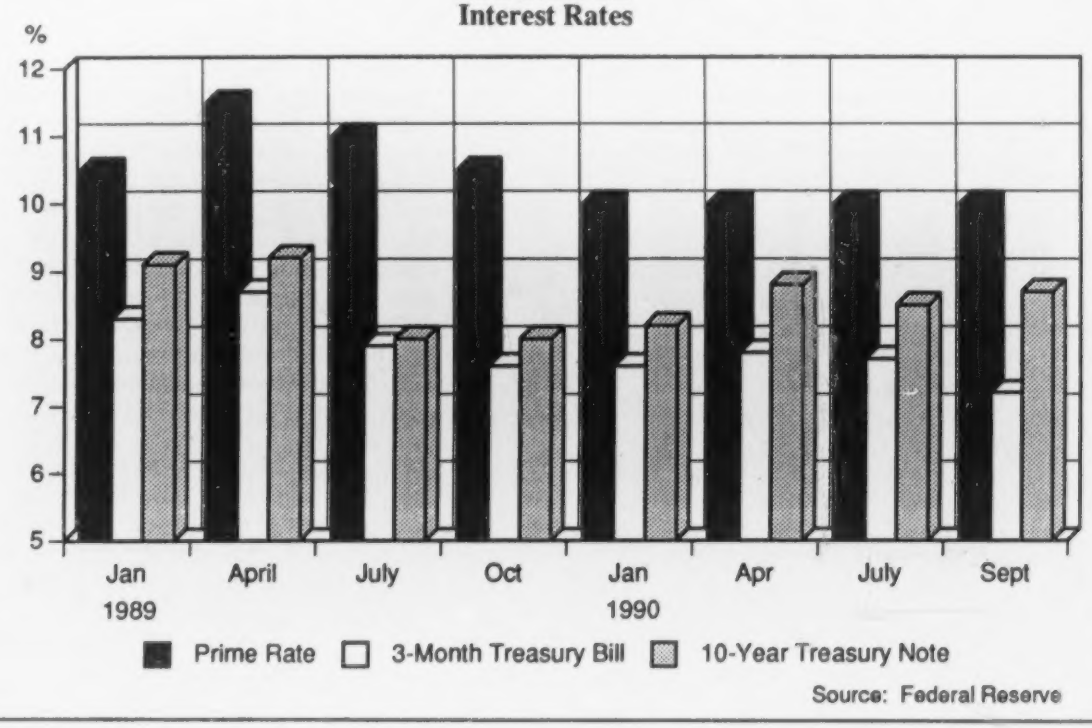
From a political perspective, legislation such as the Clean Air Act, Americans with Disabilities Act, and Parental Leave bills are no-lose propositions for Congress. By passing the measure, Congress gets acclaim and support from specific issue-oriented interest groups. If the President vetoes the bill, one party in Congress is handed a potent political weapon for the next campaign. If the bill becomes law, Congress will be lobbied by anyone seeking an exemption to the law, i.e., a loophole, for their company or industry. Lobbyists are the first in line when it's time to contribute to a Congressman's Political Action Committee. The wheels do turn slowly in Washington, but they always keep turning.

Key Indicators Review

Interest rates have remained stubbornly high since peaking in the spring of 1989, when the prime rate reached 11.5 percent. See Figure 12. This marked the first time since 1984 that the prime rate reached double-digits.

Despite the sluggish performance of the U.S. economy during 1990, interest rates have moved

FIGURE 12
Interest Rates



Source: Federal Reserve

only slightly downward. Through August 1990, the prime rate was 10.0 percent, only slightly below the 10.5 percent rate of August 1989.

Long-term interest rates, which reflect investors' expectations about inflation, fell throughout 1989, ending the year below 8 percent. Through August 1990, however, long-term rates moved steadily upward, with the oil crisis in the Mideast sending the rate on 10-year Treasury notes to 9.1 percent—its highest level in five years.

Interest rates and inflation move in tandem: as inflationary expectations decrease, interest rates fall, and vice-versa. The first seven months of 1990 indicate that inflationary expectations are on the rise. For the 12-month period ending in July 1990, consumer prices rose 4.8 percent. The sudden rise in oil prices following the crisis in the Mideast will likely push consumer prices up to the 6 percent level for the entire year.

Employment levels remained very strong in 1989 and into 1990, thus pushing wage costs up for employers and contributing to higher inflation. When labor markets are tight, employers have less bargaining power when negotiating contracts with employees.

In 1989, according to IBFI's Production Employees Cost Survey, total production wages for participating forms manufacturers increased by 4.1 percent. This report is based on a sample of 104 manufacturing plants in the United States representing 5,350 workers.

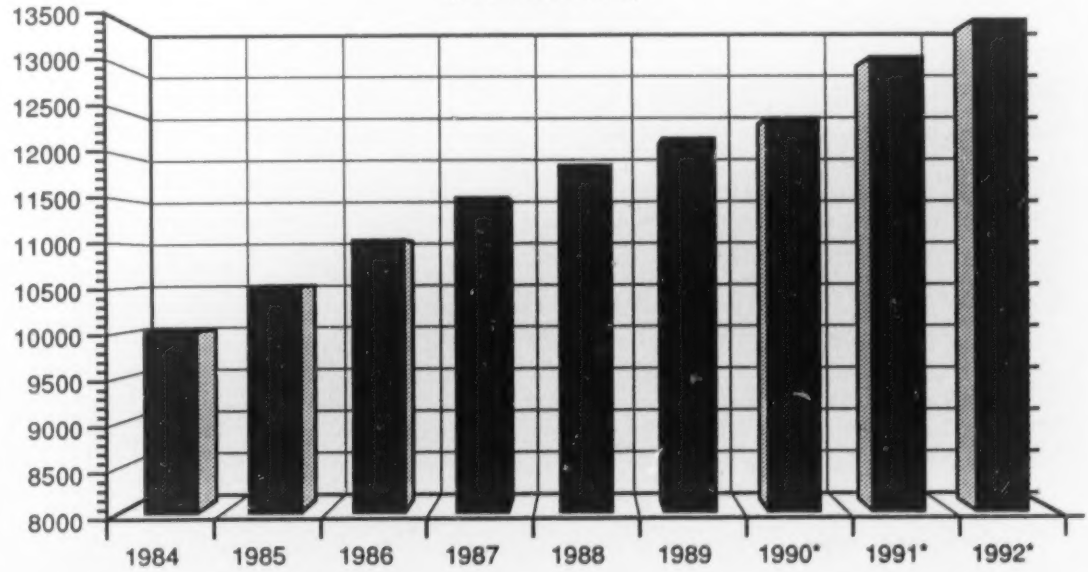
As discussed earlier in this section, a key factor in rising inflationary expectations is the fact that the political winds in Washington are presently blowing in the direction of more regulations on business practices, reversing the trend toward deregulation of competition that was initiated in the late 1970s.

Table 4 presents the IBFI forecast for economic growth through 1994. This forecast calls for real GNP growth of 1.1 percent in 1990 and 1.3 percent in 1991. In other words, the U.S. economy will experience a short recession, beginning in the fourth quarter of the current year and lasting through the second quarter of 1991. Although the proximate cause of this mini-recession is the invasion of Kuwait, which sent oil prices skyrocketing, the underlying reason is that the consumer has finally run out of steam. Even before the Iraqi invasion, the level of consumer confidence in the economy was at its lowest point since the depths of the 1982 recession, according to the Conference Board (New York). More significantly, the collapse of the residential real estate market throughout much of the United States has had a much greater impact on the average consumer than the 1987 Stock Market crash. For the average consumer, the home is their chief financial asset; a loss in its market value is certain to have a negative effect on their spending plans and on their level of confidence in the future.

It is unavoidable that the U.S. economy will experience a recession in the 1990-91 time frame. The severity of the recession will be affected by the actions of the Federal Reserve and the Congress. If the money supply is increased and capital gains taxes are reduced, the economy will recover fairly quickly as consumers regain confidence and spending power. But, if the money supply is tightened and tax rates are increased, the economy will face the danger of lapsing into a rerun of 1970's-style stagflation in 1991 and 1992.

However, even with increased consumer confidence, the economy faces rough sledding until the election year of 1992. Yet, if consumers, business and government can devote the next few years to squeezing the excessive debt out of the nation's economic system (just as the early 1980s were devoted to squeezing excessive inflation out of the U.S. economy), the decade of the 1990s will provide unprecedented business opportunities. Some companies, and some nations, will reap these opportunities—if they have benefitted from the economic history lessons given over the last 20 years.

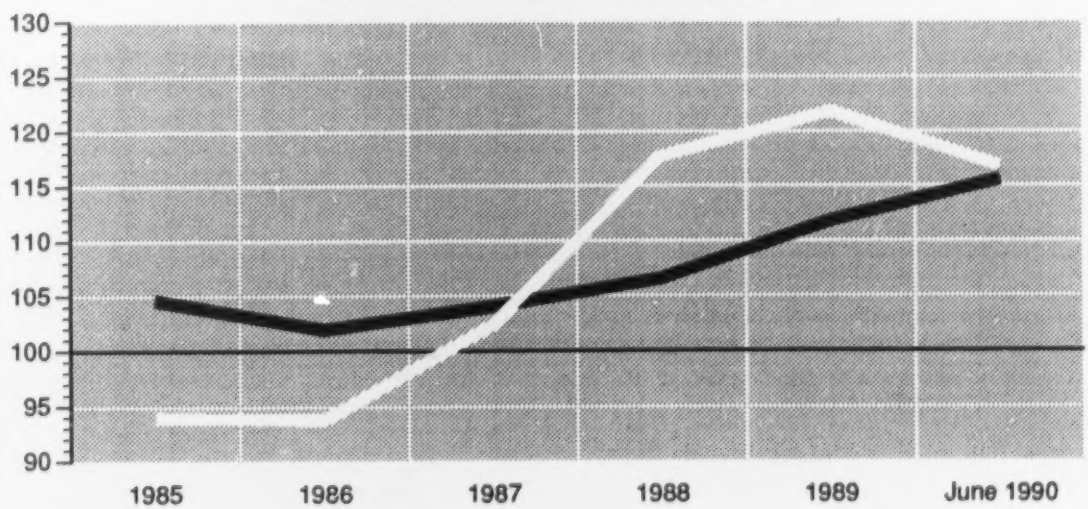
FIGURE 13
Uncoated Freesheet Capacity, North America
(000 short tons)



* Projected

Source: American Paper Institute

FIGURE 14
Producer Price Indices
Total Finished Goods vs. 15lb Forms Bond



Source: Bureau of Labor Statistics

PAPER OUTLOOK

The key issue concerning the supply of paper is, of course, capacity. Figure 13 shows that uncoated freesheet capacity in the United States is projected to increase by 5.4 percent in 1991, compared to an increase of just 1.9 percent in 1990.

The rise in uncoated freesheet capacity is evident from the list of new paper mills scheduled to go into operation between October 1990 and September 1991:

- Willamette (South Carolina)
- Boise Cascade (Minnesota)
- Union Camp (South Carolina)
- Georgia-Pacific (Arkansas).

The announced total new capacity for the above mills will be in excess of one million tons of paper per year.

Despite the volatile price swings for forms bond since 1985, paper prices tend to mirror the movement of overall prices in the economy. Figure 14, for example, shows that from 1985 through June 1990 the producer price index for forms bond increased by 24.3 percent. Over this same period, the overall producer price index for finished goods (excluding consumer foods) increased by 10.5 percent and the overall consumer price index increased by 20.7 percent.

As every forms manufacturer knows all too well, forms bond prices strongly correlate with business forms prices. Figures 15-18 show how this relationship has varied among the forms industry's major product lines. In addition, Figure 19 shows how the final transaction price paid for paper is affected by company size.

Paper prices are signalling devices for the degree of paper availability, and they have a large impact on inventory building decisions by forms companies. As shown in Figure 20, forms companies have reduced their level of inventories in response to changing market conditions.

Figure 21 tracks the growth in total paper shipments by U.S. mills for forms bond and carbonless. It shows that shipments of carbonless paper grew a total of 41.5 percent from 1985 through 1989.

The unfriendly takeover of Great Northern Nekoosa by Georgia-Pacific in 1990 had two immediate results. First, it catapulted Georgia-Pacific into the position of North America's largest forest products company, although International Paper remains the largest producer of uncoated freesheet papers. Secondly, it raised the possibility that a wave of similar acquisitions was about to disrupt the normally placid waters of the paper industry.

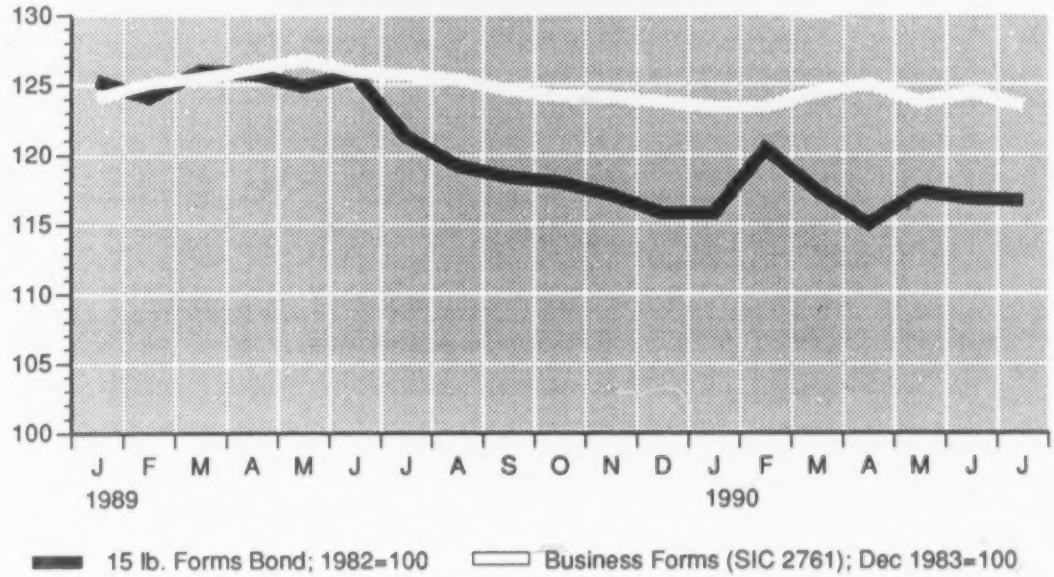
In the months since the completion of the Georgia-Pacific acquisition in March 1990, Willamette Industries acquired PennTech Papers, a producer of specialty grades. Carbonless paper producer Appleton Papers, spun off by its parent company, merged with Wiggins-Teape of the United Kingdom. Frye Copysystems, producer of coated carbon papers, acquired two of its competitors, and thus reduced the number of large producers of carbon paper in the United States to just two firms. (The other producer is Technicarbon, Inc.). James River also announced that it was selling its two uncoated freesheet mills in the Eastern United States.

These developments indicate that the paper industry is consolidating, with paper companies becoming more focused in their operations and marketing strategy. However, the current tight credit conditions of the U.S. capital markets and the squeeze on paper industry profitability in 1990 make it unlikely that there will soon be another acquisition of the magnitude of Georgia-Pacific's takeover of Nekoosa. Average earnings for the 13 largest paper companies decreased by 28 percent in the second quarter of 1990 compared to the second quarter of 1989.

In *Perspective 89*, we noted that pulp prices had peaked in 1989 and were probably headed downward in 1990. Events have borne out the accuracy of this prediction. The market price for bleached hardwood kraft reached $750 per metric ton last year, before falling to $650 per ton in the second quarter of 1990. Due to the falling value of the U.S. dollar since its historic peak in 1985, strong end user demand for paper products, and tight pulp producing capacity, the price for market pulp shot up dramatically from 1986 through 1988. However, by August 1989, the combination of sluggish end-user demand and the addition of new pulp-producing capacity started a slide in the price of pulp. The addition of new pulp-producing capacity in Canada and Brazil in 1990 indicates that the price of pulp is unlikely to be moving upward again until 1992, at the earliest.

FIGURE 15

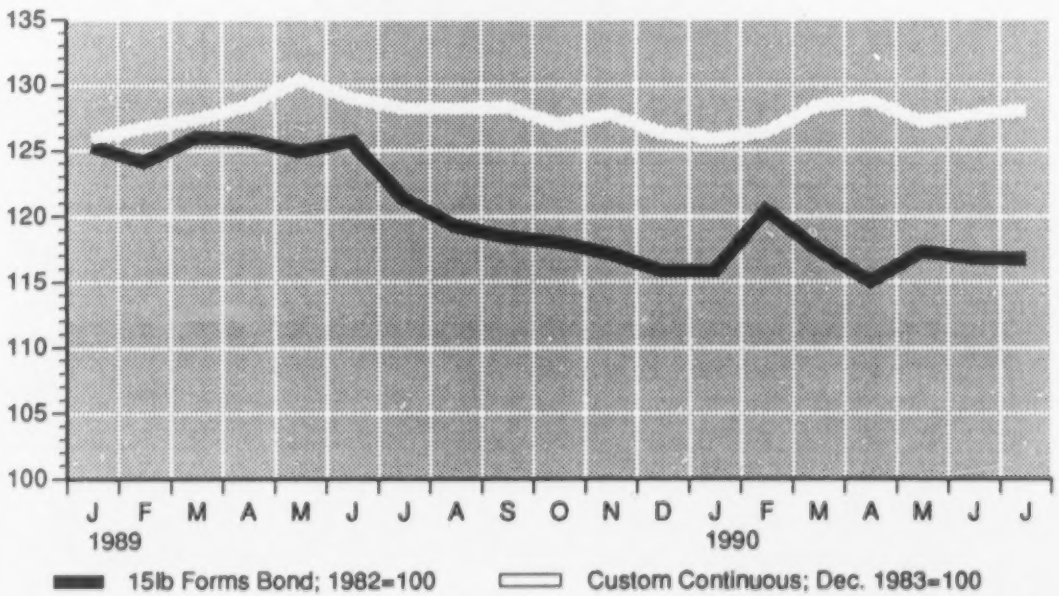
Producer Price Indices
15lb Forms Bond vs. Business Forms



Source: Bureau of Labor Statistics

FIGURE 16

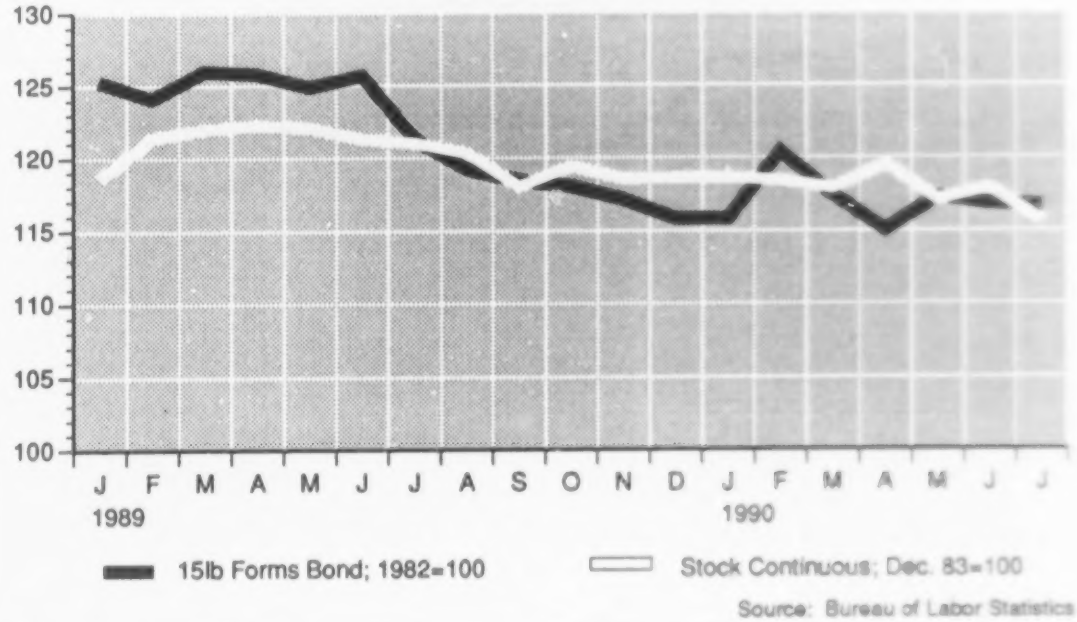
Producer Price Indices
15lb Forms Bond vs. Custom Continuous



Source: Bureau of Labor Statistics

FIGURE 17

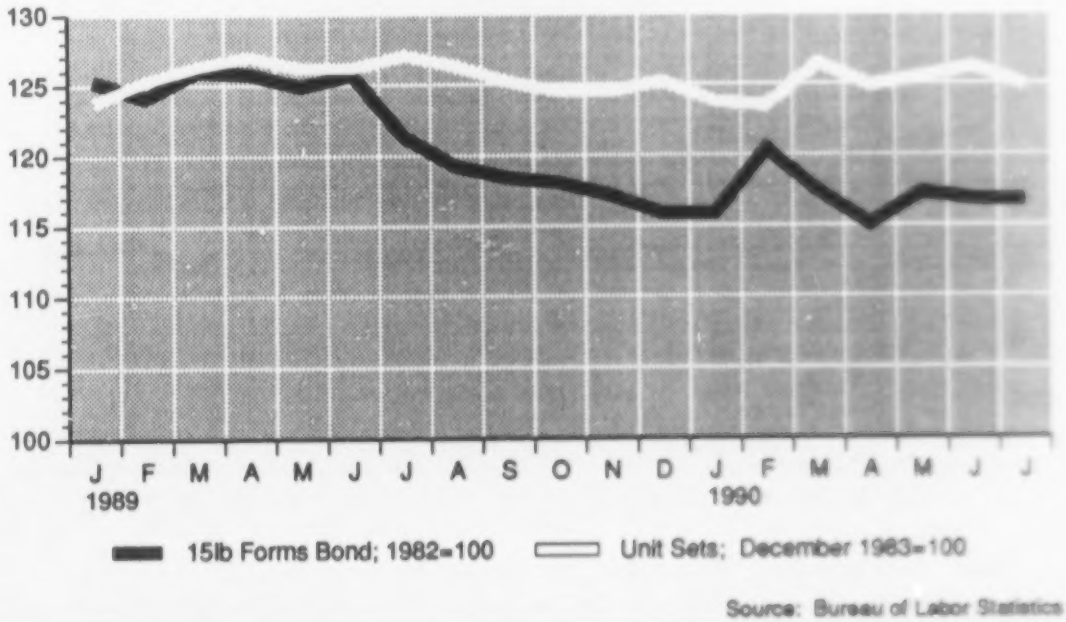
Producer Price Indices
15lb Forms Bond vs. Stock Continuous



Source: Bureau of Labor Statistics

FIGURE 18

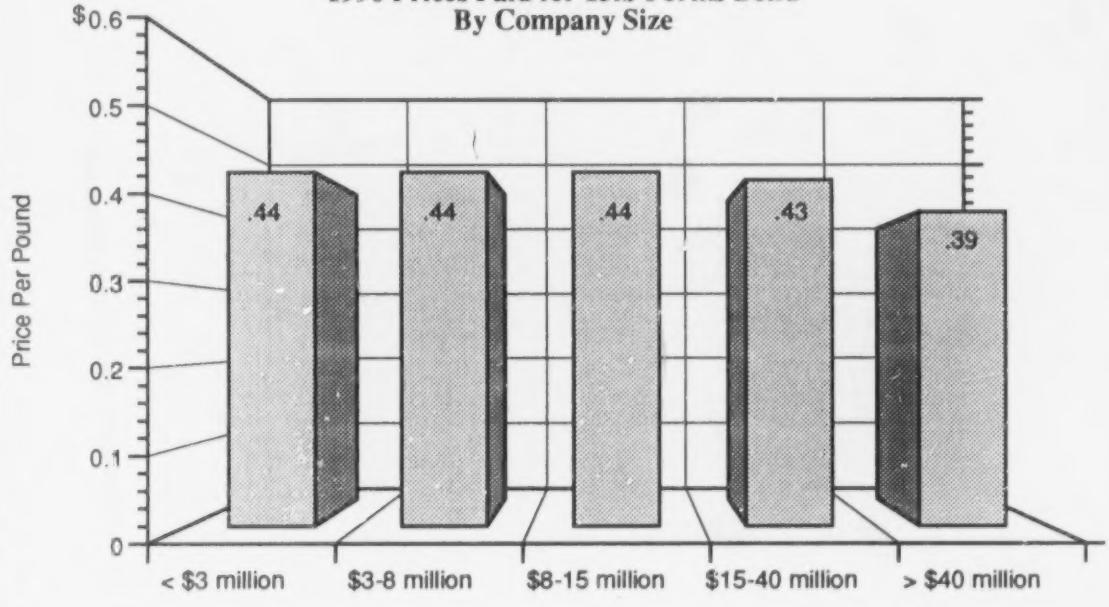
Producer Price Indices
15lb Forms Bond vs. Unit Sets



Source: Bureau of Labor Statistics

FIGURE 19

1990 Prices Paid for 15lb Forms Bond By Company Size

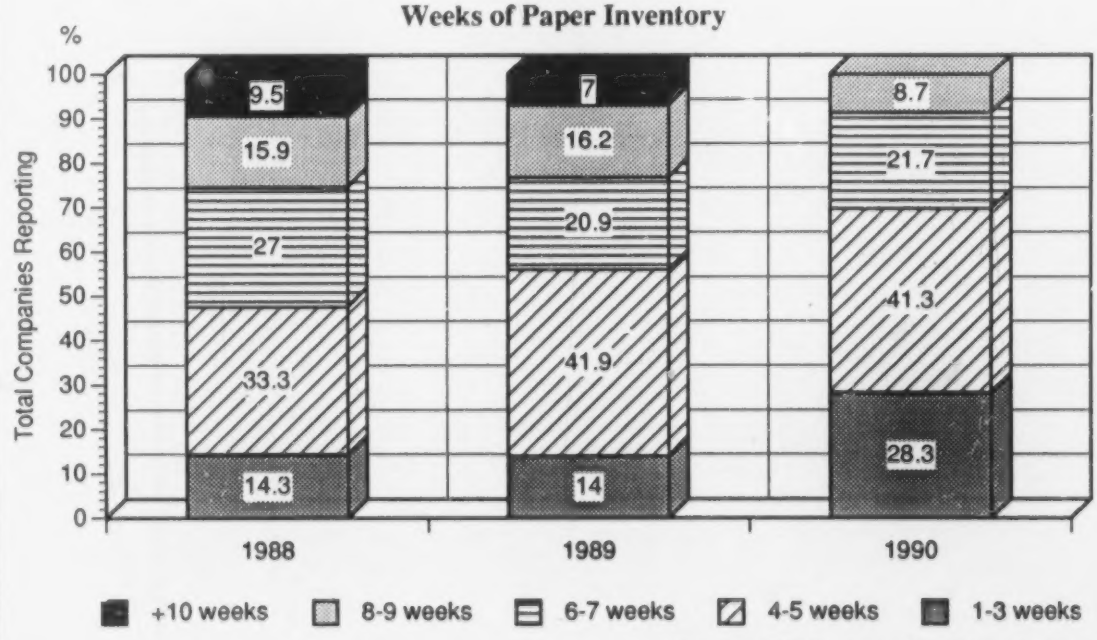


* F.O.B. Mill through June 1990

Source: IBFI Business Conditions Survey

FIGURE 20

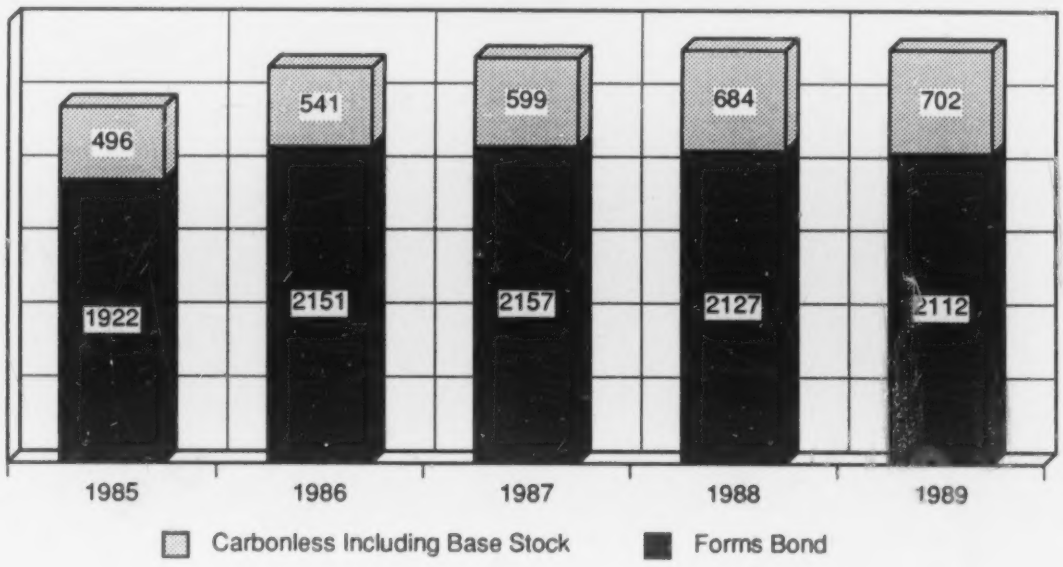
Weeks of Paper Inventory



Source: IBFI Business Conditions Survey

FIGURE 21

Annual U.S. Paper Shipments
(000 short tons)



Source: American Paper Institute

TABLE 5
Forms Manufacturing Plant Size
By Number of Employees

Number of Employees Per Plant	No. of Plants 1987	No. of Plants 1982	% Change 1987 vs. 82
1-4	93	79	17.7%
5-9	63	79	-20.3%
10-19	111	122	-9.0%
20-49	231	235	-1.7%
50-99	186	147	26.5%
100-249	141	120	17.5%
250-499	27	22	22.7%
500-999	1	6	-83.3%
TOTAL Plants:	853	810	
TOTAL Companies:	601	582	

Source: U.S. Bureau of the Census, 1982 and 1987 Census of Manufactures

TABLE 6
Growth of Forms Industry Employment

	TOTAL Number of Companies	Number of Plants	Plants With 20 or More Employees	TOTAL Number of Employees (000)
1967	454	542	295	34.6
1972	533	667	376	38.5
1977	604	795	477	45.3
1982	583	809	529	49.6
1987	601	853	586	53.2

Source: U.S. Bureau of the Census, Census of Manufactures

THE CHANGING STRUCTURE OF THE BUSINESS FORMS INDUSTRY

The structure of the North American forms industry is changing in response to the dynamics of the business forms marketplace. In general, forms manufacturers are coping with sliding profitability, chronic overcapacity and ferocious price competition. Operating under such challenging conditions has required every forms manufacturing CEO in North America to continually ask themselves two questions: "What business am I in?" and "What level of investment in people, systems and equipment is required for my company to be competitive in that segment of the business?"

Data from the U.S. Census Bureau and other sources show that, in response to these conditions, many forms manufacturers are making the transition from being "product-driven" to being "(market) niche-driven." As a result of this drive to become more focused, the size of forms companies is changing, as shown in Table 5.

Except for very small establishments (less than 5 employees), there has been a reduction in the number of forms manufacturing establishments with less than 50 employees since 1982. This mainly reflects the impact of increased competition during the 1980s on marginally productive forms companies.

There has been growth since 1982 in the number of plants with between 50 and 500 employees. Table 5 shows an 80% drop in forms plants with over 500 employees, reflecting the shrinkage in average order size in the forms industry. Table 6 tracks the growth of forms industry employment from 1967 to 1987.

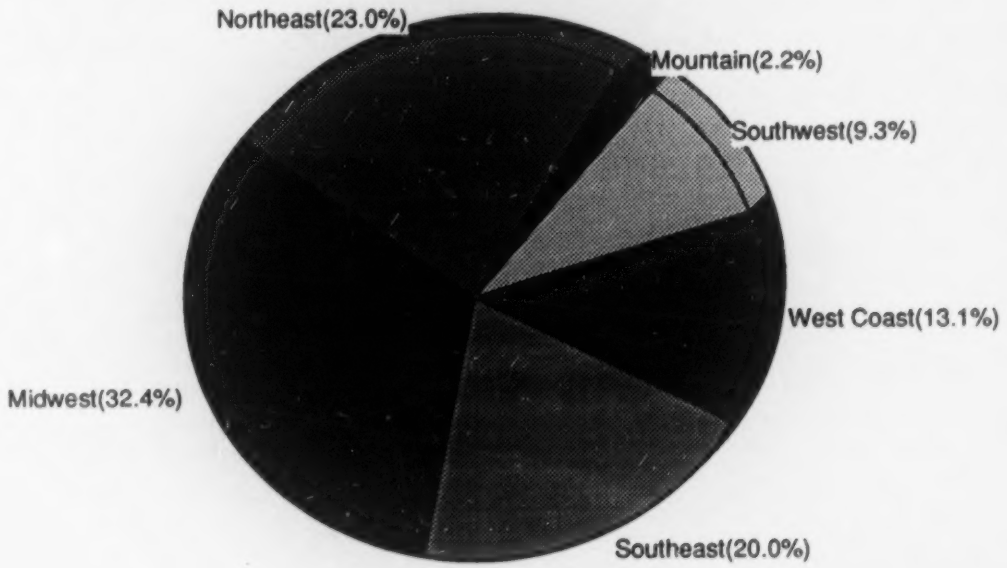
Another indicator of company size is annual sales volume. From 1982 to 1987, the average value of shipments per U.S. forms manufacturing establishment increased in nominal terms by 34%—from $6.24 million in 1982 to $8.62 million in 1987; adjusted for inflation, this is equivalent to an increase of 17.9 percent, or real sales growth of about 3.6 percent per year. The number of establishments grew by just 5.3% over the same time frame, evidence of the consolidation phase that the forms industry entered during the mid-1980s.

Figure 22 and Table 7 provide a breakdown of the regional manufacturing of forms circa 1987. During the 1980s, the Midwest, Southeast and Mountain regions all increased their share of the forms manufacturing base, while the Northeast region lost one-fifth of its share of U.S. forms production—falling from 29.1 percent in 1982 to 23.0 percent in 1987.

Based on current trends, it is reasonable to conclude that in the 1990s there will be an increase in the number of specialized forms manufacturing plants, as forms manufacturers combine technology and manufacturing flexibility to fill specific market niches.

FIGURE 22

Regional Manufacture of Forms, By Shipment Value



Source: 1987 Census of Manufactures

TABLE 7
Geographic Breakdown of Forms Manufacturing

REGION	TOTAL PLANTS	PLANTS WITH 20+ EMPLOYEES	SHIPMENT VALUE ($ MILLIONS)
Northeast	**191**	**124**	**1,692.6**
Connecticut	16	12	107.4
Massachusetts	13	7	NA
New Jersey	33	22	200.6
New Hampshire	7	5	NA
New York	59	31	243.2
Pennsylvania	53	38	810.4
Vermont	4	4	139.0
Rhode Island	6	5	19.7
Southeast	**163**	**111**	**1,471.8**
Alabama	8	5	55.3
Arkansas	5	5	97.7
Florida	24	16	134.3
Georgia	29	16	166.2
Kentucky	6	6	65.5
Louisiana	8	5	31.5
Maryland	12	10	201.1
North Carolina	24	17	NA
South Carolina	9	4	60.7
Tennessee	20	13	108.1
Virginia	15	12	211.7
West Virginia	3	2	92.0
Midwest	**242**	**171**	**2,384.3**
Illinois	57	41	516.6
Indiana	13	9	195.4
Iowa	16	14	213.8
Kansas	16	11	NA
Michigan	38	23	209.2
Minnesota	18	14	NA
Missouri	23	13	252.6
Ohio	37	30	458.9
Wisconsin	20	13	258.2
Nebraska	4	3	NA
Southwest	**91**	**63**	**685.2**
Oklahoma	8	5	106.7
Texas	70	49	519.5
Arizona	13	9	59.0
Mountain	**20**	**17**	**161.9**
Idaho	2	2	NA
Utah	7	7	98.3
Colorado	11	8	55.9
West Coast	**128**	**88**	**965.8**
California	100	68	772.6
Oregon	16	13	143.5
Washington	12	7	49.7

NA = Not Available

Source: U.S. Census Bureau, 1987 Census of Manufactures

Aside from the overall performance of the general economy, no other factor affects the business forms industry as much as the computer industry. In 1989-90, technological developments which ultimately will affect the way businesses handle information have occurred on several fronts.

This section addresses the key developments which will affect the use of forms—in the areas of computers, input/output peripherals, forms and general purpose software, and communications—before attempting to draw some conclusions about the market threats and opportunities they present to business forms manufacturers.

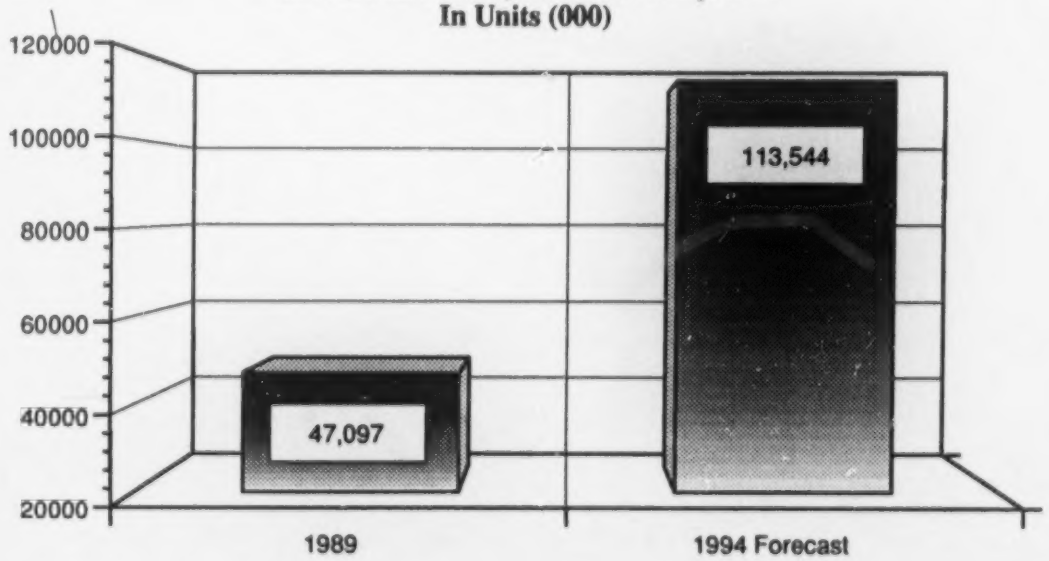
For forms manufacturers, the importance of understanding the underlying information needs of organizations cannot be underestimated. Forms, whether paper or electronic, are a vehicle for preparing, distributing and storing the data necessary to an effective information system. As technology advances, the information needs of organizations will, unquestionably, change as well.

But while technology is important, we should remember that the nature and use of forms is affected by numerous other factors that cannot be controlled, and, in some cases, not even anticipated by forms manufacturers. This would include such factors as postal rate increases, new government reporting requirements, the cost of paper, corporate takeovers, and changing management philosophies.

More Powerful Computers

Although the computer industry in general experienced soft demand in 1989-90, advances in price/performance continued. The most important developments continue to be in the personal computer and workstation segments of the market. Over 40 million of these computers are installed in the U.S.; over 90% are IBM PC-compatible, with most of the remainder manufactured by Apple Computer. See Figure 23.

FIGURE 23
U.S. Installed Base, Personal Computers
In Units (000)



1989-94 Compound Annual Growth Rate: 19.2%

Source: Dataquest Inc.

The most significant development has been the proliferation of personal computers using more powerful Intel microprocessors. In 1990 Intel began delivering 32-bit 80486 chips, which process data 32 bits at a time, in quantity. The 80486, with a speed of almost 15 MIPS (million instructions per second), is 60 times as fast as the 8088 microprocessor used in the original IBM Personal Computer, which was introduced in 1982.

A number of vendors also introduced products based on a new Intel microprocessor, the 80386SX, which is a hybrid 16-bit and 32-bit chip. The 80386SX offers a low entry cost to sophisticated 32-bit software, making multitasking and graphics-oriented software practical. Computers based on the 80386SX, 80386, and 80486 microprocessors have established a new baseline for performance in Fortune 1000 sites. This means increased computing power available to virtually any employee in the organization.

The so-called "bus war" between MCA (Micro Channel Architecture) and EISA (Extended Industry Standard Architecture) remains unresolved. MCA is the proprietary internal data path specification IBM developed for its PS/2 series. EISA is an open standard agreed upon by the "Gang of Nine," which includes Compaq Computer, Hewlett-Packard, NEC Information Systems, Zenith Data Systems, and others (the PC and PC/AT bus developed by IBM is now referred to as ISA). While MCA promises somewhat faster speed, EISA preserves upward compatibility for ISA products, including software and add-in boards, i.e., a company's current investment will not become worthless.

IBM's MCA was introduced first and there now are about three million IBM MCA personal computers installed plus some IBM workstation computers and low-end mainframes with MCA. At least 17 other vendors, including Olivetti, Tandy, and Dell Computer, have introduced MCA personal computers, but sales by vendors other than IBM in general have been slow. EISA products have become available more recently, and there now are at least 20 vendors of EISA-based personal computers. The most likely scenario is that MCA and EISA will co-exist indefinitely. Either will satisfy most users' needs, but having to provide products for both will put a strain on software developers.

While Fortune 1000 companies are purchasing more powerful personal computers, smaller businesses are finding a large number of low-cost, reliable, AT-compatible computers to choose from as well as the 386-based models. Computers still are an intimidating purchase for many of these companies. However, while over 75 percent of the 386-based computers in the Fortune 1000 are IBM or Compaq brands, smaller businesses are more likely to purchase other nationally-distributed brands (NEC, Dell, etc.) or other brands supported by their local computer dealer.

With workstation-like personal computers such as the Apple Macintosh IIfx and the Compaq Systempro, the distinction between high-end personal computers and low-end workstation computers is blurring. Prices and capabilities are converging as personal computer vendors move up-market and workstation vendors move down-market. Workstations promise to provide another 10-fold increase in speed (160 MIPS vs. 15 MIPS for the 80486 chip) by 1993 by using RISC (Reduced Instruction Set Computing) technology, for which Microsoft plans to adapt the OS/2 operating system. Dataquest, a market research firm, estimates that workstation shipments in 1989 were only about 3 percent of personal computer shipments, but that the workstation segment will experience a 51 percent annual growth rate compared to only 9 percent for personal computers.

The importance of these developments for forms manufacturers are obvious. Within a few years, there will be a dramatic increase in computing power available to individuals and work groups. This increased power will enable users to run more sophisticated software, integrate applications, maintain sizable databases, and access local area networks, all of which may affect the ways in which companies use forms.

Improvements in Nonimpact Printers

Since the middle of 1989, there have been several significant developments regarding nonimpact printers, especially laser printers. These developments foretell the widespread use of laser printers for applications requiring graphics printing and sophisticated font capabilities.

The installed base of laser printers in the U.S. reached 2.7 million units at the end of 1989, and is expected to increase dramatically to 4.2 million by the end of 1990. See Figure 24. The installed base is expected to exceed 10 million printers in 1994. While one out of every 11 computer printers installed in 1989 was a laser printer, this ratio will increase to one of every eight this year and one of every four in 1994.

Another type of nonimpact printer, the office quality ink jet printer, is carving out a niche as a quiet, personal printer with print resolution (300 dots per inch, or dpi) equivalent to most laser printers. Over one million of these printers, primarily Hewlett-Packard DeskJet Plus models, will

be installed by the end of 1990. While these printers have many of the functional capabilities of HP's LaserJet printers, they have slightly lower print quality, depending on the paper used, and tend to be installed in smaller offices and lower volume applications. Therefore, they have the potential, which is largely unrealized at this time, to print forms and other graphic documents.

Laser printers have become the standard for office printing—crisp text, high-resolution graphics, quiet operation. With long-term decreases in the cost of memory chips, laser printers can only get more memory for graphics, fonts, etc.—in short, improved price/performance.

A number of new products were introduced in 1989, but none was more significant than HP's LaserJet IIP, a 4 ppm (page-per-minute) laser printer. Offered by the industry's dominant vendor at a list price of $1,495 and a street price under $1,000, this model alone could exceed 500,000 shipments in 1990. Today there are about a dozen 4-6 ppm printers offered at a $1,000 street price—all with enhanced graphics capability as well as font cartridge and soft font capability—by such leading vendors as Okidata, Epson, IBM, Qume, Fujitsu, and Facit.

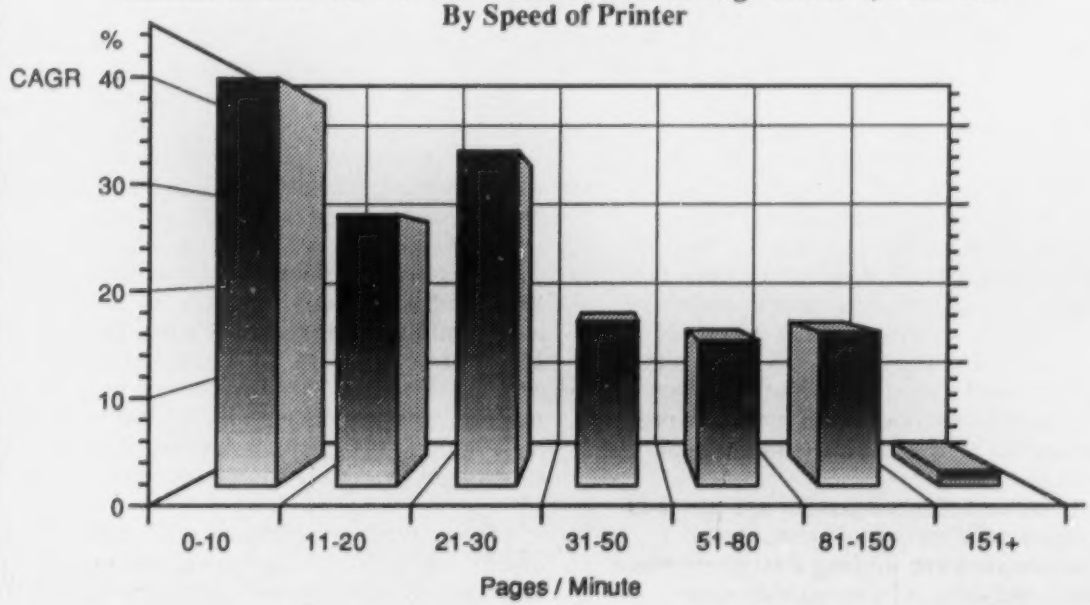
Early in 1990 Hewlett-Packard introduced another major new product, the LaserJet III printer. The LaserJet III is replacing the LaserJet II printer, which has been the industry's leading product in terms of market share since 1987. The LaserJet III uses PCL 5, a new version of HP's printer language which contains scalable font outlines in addition to bit mapped fonts. It also contains HP's new Resolution Enhancement technology, which automatically adjusts the dot size and placement on the printed page; this achieves a level of print quality equivalent to a 400-600 dpi printer without Resolution Enhancement.

Scalable font technology allows users to print font characters in virtually any size as well as to create special effects, e.g., slanted characters. Previously, these capabilities were only available to users with PostScript printers. Users are demanding more fonts and vendors are providing them in several ways: plug-in bit map cartridges, soft (downloadable) bit map fonts, scalable font outlines, and PostScript cartridges or software. Each has its advantages and disadvantages. Apple and Microsoft have announced plans to develop an alternative to PostScript, called TrueType, which will be included in future releases of the Macintosh and OS/2 operating systems.

PostScript ultimately is desireable because of its device-independence and its ability to be used across a number of platforms. PostScript-compati-

FIGURE 24

Annual Growth Rate of U.S. Installed Base of Page Printers, 1989-1994
By Speed of Printer



CAGR=Compound Annual Growth Rate

Source: Dataquest Inc.

ble printer prices are declining, in large part due to an increase in the number of companies offering compatible interpreters. At the same time, print quality is increasing, and users have improved font and graphics options.

Color Printer Developments

While the lack of color capabilities, especially in output devices, still limits the growth of forms applications, more color scanners, printers, and copiers are becoming available, and prices are decreasing. Factors driving this growth include a general increase in the sophistication of business communications, in part due to desktop publishing, and the increasing ability to create color originals, i.e., more users have color monitors and graphics software.

Users today can produce good quality color originals via color printers utilizing a variety of technologies: ink jet, thermal transfer, or electrophotographic. For superior print quality, they can transfer their files electronically or via floppy disk to an imagesetter, generally for offset duplication. PostScript, because of its device independence, facilitates such file transfers.

The installed base of color printers is expected to increase rapidly from the small number installed today. Electrophotographic technology with laser or LED imaging is likely to be the big winner. Its chief disadvantage has been its high initial equipment cost, but electrophotographic color copiers below $20,000 are now available. Electrophotographic technology also will be the dominant technology in the multifunction device market (combination printer/scanner/copier/facsimile machines).

In general, the last several years have produced evolutionary product improvements in copiers in the areas of reliability, convenience, and functionality. Both color printers and color copiers have achieved only low market penetration to date; it is expected that sites which can justify a color printer to create originals will, over time, find they need a color copier to create duplicates as well as to copy other material.

Digital Copier Trends

In September 1990, Xerox announced plans to market a digital copier that combines the functions of high speed copying, printing, scanning, fax, and computing in a single unit. Digital scanning, using laser or LED technology, is beginning to replace optical scanning in the higher product segments; digital copiers will produce significant functionality improvements in terms of image editing and electronic collation. For some simple applications, forms designers or individuals creating forms for their own or departmental use could scan in an existing or generic form and use these editing capabilities to create a form which meets their needs.

The market for multifunction devices will be developing over the next several years. While these sophisticated devices for the most part are not required to create, complete, or manage forms, they may affect forms use in several ways. Since they will be networked, they may affect the way in which information is communicated. Since digital scanning will be integral, they will facilitate the inclusion of outside information into computer-generated documents. The general sophistication of the software resident on the network or in the host computer will be greater than for the average laser printer. Finally, the combination of an existing network and appropriate applications should make it easier to justify a color output device.

Breakthroughs in Operating Systems and Environment Software

OS/2, the operating system Microsoft has been developing for the IBM PS/2 line of personal computers, is gaining acceptance more slowly than anticipated. A 1990 study conducted by The Gallup Organization found that although 35 percent of Fortune 1000 companies reported running some OS/2, only 2 percent of their personal computers, on average, are OS/2-compatible.

OS/2, which has multitasking capability (the ability to run more than one program at a time), will replace DOS over time as the operating system of choice for IBM-compatible personal computers. However, the need to change is not compelling for many users considering the hardware upgrades required as well as the lack of software which utilizes the additional capabilities of OS/2. Most OS/2 applications basically will be upgrades (e.g., graphical user interface, mouse support) of existing DOS software; no dramatic new applications due to OS/2 are anticipated.

The big news in environment software during 1990 was the introduction of Windows 3.0, a major upgrade to Microsoft's graphical user interface (GUI) for DOS (Presentation Manager is the GUI for OS/2). Most importantly, Windows 3.0 eliminates the 640K memory barrier which otherwise limits the applications which can be run under DOS. It also has a better look and feel and improves the networking possibilities for DOS applications. There is a penalty to pay—Windows 3.0 requires 2 Mb of memory and runs better with a 386-based (or 486-based) computer. Regardless, industry sources predict that 3.2 mil-

lion copies of Windows 3.0 will be sold in 1990, some at retail and some bundled with new systems.

The market for another operating system, Unix, is confusing. Unix is a desirable platform for developing multiuser applications. However, there is not a single Unix standard, and Unix is difficult to learn. Sun Microsystems and AT&T are supporting Sun's Open Look graphical user interface, while HP, Digital Equipment, and IBM are supporting a cooperative GUI development called Motif. It appears more likely that OS/2 applications on high end 386/486-based hardware as well as the new workstation-like Macintosh computers will compete with workstation computers.

All major software will be written for both Windows and OS/2. Some developers will also create software for Macintosh and/or Unix systems. Most vendors do not want to bet on which operating system, if any, will prevail. But this requires software companies, many of them small, to duplicate their development efforts, increasing costs or time, or to choose among platforms, limiting their potential market.

Finally, virtually all major software vendors are incorporating GUIs into their future product upgrades. For users, this means easier-to-use software for forms applications as well as other applications.

More Sophisticated DTP and Word Processing Software

While there is a lot of interest in forms software, there are a number of other software developments which may have an equally dramatic impact on forms design applications.

One area is desktop publishing (DTP). Desktop publishing allows users to compose pages from the output of other software packages, e.g., text from word processing software, a chart from a graphics software package, a scanned logo or illustration, etc. Desktop publishing software, in essence, works with the same image elements that forms design software does.

In fact, users already are using desktop publishing software such as Aldus PageMaker and Ventura Publisher to create forms. These products allow users to compose pages, and many forms, e.g., purchase requisitions, are simply special "pages." Aldus' user research shows that 8-11 percent of PageMaker users (including the Internal Revenue Service) use the product to create forms, although forms is very seldom the primary application. Significantly, only 3 percent of these users had expected forms design to be an application.

A second area is word processing. The enhanced word processing programs such as WordPerfect and Microsoft Word now can be used to design fairly sophisticated forms. Some have built-in page layout capability and other desktop publishing features, e.g., line drawing, shading, and font selection. Some can import graphics, such as logos or illustrations.

WordPerfect, the industry leader, added a "tables" function in its latest upgrade, which facilitates the placement of boxes and grids on a page; WordPerfect is advertising its ability to make forms. Word and Excel, both from Microsoft, are closely integrated word processing and spreadsheet packages; Word has a tables feature and also links to Excel for data entry. Both products offer users a variety of fonts, variable width lines, shading, and similar features which can enhance the effectiveness of a form.

One of these products is or will be available in many small businesses within the next few years, which potentially could have a significant impact on forms creation. Desktop publishing and word processing programs, of course, provide only the forms design capability. They do not (at least not easily) provide any data entry or database functions.

Database Software Directions

Forms and databases go hand-in-hand. Forms collect data in a systematic manner, and databases provide access to and reporting of systematic data. Forms software often provides links to database files as input files.

Many database software packages, in fact, offer users an option to use a "form" on the computer monitor to enter data to the database. Database software vendors have improved their data entry screens and provide various levels of intelligence, e.g., default values, data validation, and automatic calculations. It is likely that some of these companies will come out with front-end forms software or full-blown forms packages.

One of the current buzzwords in the computer industry is "groupware," which refers to software that allows workers on networks to share information and communicate electronically. To some extent, database software, especially on minicomputers and mainframes, has exhibited these characteristics for years. Oracle Corporation, with a series of products based on SQL technology, is leading the trend to larger databases on personal computers; the common technology provides access to a single database from mainframes, minicomputers, or personal computers. This capability could be incorporated into new software by forms software developers.

New Developments in Forms Software

The traditional distinction in forms software is between forms design and forms processing. Forms design software offers a set of tools, such as boxes, shading, etc., to create blank forms. Such software may also include the ability to scan in and edit existing forms, print bar codes, and similar features. Forms processing deals with the actual entry of variable information and usually requires integration with other software; however, the focus has been on electronically duplicating the previously-manual process.

As forms become "smarter," the focus is shifting more to user applications. Companies want to manage information better—collect, display, communicate, and store it. Leading software packages offer LAN (Local Area Network) capability, either standard or through optional modules. Forms may be linked to multiple databases in more sophisticated applications, which may not even be thought of as forms applications, but rather as inspection reporting, arrest processing, or similar systems.

The leading forms software packages for IBM-compatible computers are Xerox's FormBase, Delrina Technology's PerFORM, and Indigo Software's JetForm. PerFORM and JetForm have separate forms design and forms fill modules and in general have better design features than FormBase. FormBase tightly integrates the form and the database, but at some sacrifice in design features. The F3 Forms Designer by Bloc Development focuses on forms design and is tightly integrated with the traditional forms manufacturing process; it provides users with very sophisticated forms design capabilities.

Each of the first three packages has relational database capability. Database linking (whether the database is flat file or relational) is very important because it eliminates errors due to double entry. Designing a form in FormBase automatically creates a database in a Xerox-proprietary format, while the other two work with Ashton-Tate's dBASE series of products.

Xerox, in its FormBase presentation at the November 1989 COMDEX trade show, stated that 33 percent of the paper used in business is forms. FormBase is a mouse-driven relational database which runs under Microsoft Windows. Xerox had four criteria in designing FormBase, which have general applicability:

- It should create and modify forms easily.
- It should create "intelligent" forms.
- It should create forms that link data, e.g., a description in a product file can be used in an order entry form.
- It should provide for the seamless integration of forms and data, e.g., a field added to the form should be automatically added to the database.

As a group, these forms programs are very flexible:

- They can be used to design forms (masters), to fill-in existing forms (forms fill-in), or for data entry directly into a database.
- They can incorporate scanned graphics, such as logos.
- They can create "intelligent" forms that can validate data as it is entered, calculate additional data, and automatically enter the current date.
- They can output to PostScript and PCL (HP LaserJet compatible) laser printers as well as traditional dot matrix printers, although graphics printing on any of these printers can be slow.

Similar forms programs exist for the Macintosh. The two leading products are Claris' SmartForm and Adobe's TrueForm. However, Macintosh forms software tends to be less integrated in terms of providing user solutions. Part of this may be due to the longstanding use of desktop publishing (PageMaker) on the Mac to design forms. But the bigger reason may be that, while applications developers for PC-compatibles have built user applications for years around dBASE and other database programs, similar powerful database programs for the Macintosh were late in coming. The Mac's display and PostScript capability also should play a role in making forms processing a more important Mac application in the future.

Will forms software survive as a separate software category? The major modules of forms software were derived from other established software—forms creation from desktop publishing, graphics, and scanning software; forms processing from database software; and forms management from database and spreadsheet software. But none of these other types of software really addresses forms effectively, e.g., most database packages do not have sophisticated font and graphics capabilities.

But this may be changing. Desktop publishing software was a hot growth segment of the personal computer market for several years, but the rate of growth has tapered off. However, as was described in the word processing discussion earlier, many of the functions previously attributed to desktop publishing now exist in word processing software. Traditional desktop publishing has

become absorbed in word processing to an extent; as a result, most DTP software is moving in the direction of professional publishing. Over the next several years, it is not unlikely that other types of software, probably database software, will impact "traditional" forms software through optional forms modules or some similar strategy.

Advances in Local Area Networks

Computing in a sense has always presented a conflict between the decentralized needs of individuals and departments for unique, timely processing and the economies inherent in the centralized operation and management of the computing resource. However, using mainframe computers to control hundreds or thousands of terminals did not give individual workers the tools they needed, and while personal computers have given many workers the tools they need, they have not helped workers share information easily or allowed people to work together. In this view, networking, especially LANs, occupies a middle ground between these two extremes.

As single user applications mature, more software and hardware vendors are focusing on work group and network applications. At the very least, networks allow multiple computers to share expensive peripherals, such as color printers. Beyond that, the value of the network largely depends on the application software, e.g., how well it takes advantage of the multiprocessing capability of the network. There is still a need for good network applications software; most packaged software was written for single users and is inadequate.

Novell is by far the leading network vendor. Novell's NetWare has over half of the market. Other leading vendors include 3Com, IBM, TOPS, Banyan, and Digital Equipment.

Computer sales today are frequently systems sales, often incorporating multiple computers and sometimes even multiple vendors. Among the exciting new networks developed to handle such situations is Microsoft's LAN Manager. LAN Manager software gives minicomputer, mainframe, and personal computer users the ability to share files, peripherals, and applications. It provides standards-based distributed computing for Unix- and VMS-based (mainframe) systems as well as personal computer systems running OS/2.

Some industry observers foresee an increase in tailor-made LAN applications that will be used in specialized industries, such as the medical/scientific and factory/manufacturing markets. If true, it seems probable that this trend would affect forms usage, but the nature of this impact is not clear yet.

There seems to be an overall divergence into a low-end market and a systems market. Furthermore, the systems market is looking for programs specifically geared to their businesses. This suggests that distribution patterns will change and there will be an increase in support requirements.

Where the needed support will come from is not clear. Users will be looking for systems solutions, which will require suppliers to provide support in the areas of software, networking, training, and even consulting; the primary supplier may need to manage subcontractors. The recent near-merger of Lotus Development and Novell was envisioned as a step to providing such support to large organizations. Unless some major mergers or acquisitions occur, users will continue to look to value added resellers, systems integrators, and other resellers to provide this support.

EDI Marches On

Electronic data interchange (EDI) is the electronic exchange of business data and transactions between two organizations with the intent of speeding the flow and accuracy of information. **One of the interesting EDI developments in 1990 was the widespread use of electronic filing of income tax returns.**

Actually, the biggest news in the exchange of "data" between organizations may be the proliferation of fax machines. Virtually any organization of any size has or will soon have one, and with prices coming down, they will soon be a departmental fixture in many organizations. Most fax communications involve text rather than data, and are therefore a fast substitute for the U.S. mail or overnight delivery services. But there is also an increasing use of fax to increase speed of information flow (e.g., ordering supplies from a vendor); such applications will affect the nature and use of forms.

Most EDI applications, of course, involve business-to-business data transmission. The Electronic Data Interchange Association (EDIA) reports that over 50 percent of the Fortune 500 companies use EDI for their business operations, especially invoicing and purchasing. EDIA estimates there are 6,000 to 10,000 EDI users in the U.S. EDI is expected to continue to make inroads in industries which must process a lot of transactions, such as retailing, finance, and transportation.

But EDI has not been an unqualified success. Many leading banks in New England and other areas have been slow to embrace EDI. The auto industry was one of the first and largest industries to adopt EDI. However, predicted savings of $200 per car due to using standardized forms have not materialized. The automakers could not

always agree on formats and smaller suppliers could not handle the technical demands. There is the further potential complication of legal action someday when a major error is made in an electronic order. So, like a lot of major changes, EDI is gaining ground but not as quickly or smoothly as predicted.

In 1990, a series of end-user focus groups on EDI implementation were sponsored by the IBFI Education and Research Foundation. One of the conclusions from this research was that "competitive pressure" is the key driving force behind most organizations' decision to implement EDI, not the desire to reduce forms expenditures.

A View of 1995

The world is changing and so must the forms industry. Business is becoming more global. The speed of business communications is increasing.

Computer system capabilities will increase dramatically over the next five years. Personal computers with 32-bit 80386 processors running at 25 MHz are already common purchases, and 486-based systems are available. Workstations with RISC processors will provide an order of magnitude more power for those applications which require it. Increased speed allows software developers to create and users to run larger, more sophisticated programs as well as network applications. The trend in leading edge corporations is toward multi-vendor distributed computing across heterogeneous networks.

Peripherals will keep pace. WYSIWYG (What You See Is What You Get) monitors will become common, providing better visual compatibility between what is seen on the monitor and the printed output. OCR (Optical Character Recognition) will be used for data entry in more applications, but will remain an extra step; more data will be captured electronically at the transaction point with a portable data entry device or other device.

We already are witnessing the beginning of a new generation of output devices. Hewlett-Packard's LaserJet III is taking print quality beyond the traditional 300 dpi level through the creative use of variable dot size and placement. The price of color printers is coming down to where they will eventually be practical in work group or networked applications. PostScript printers are becoming more common as more emulations are available; PostScript also provides a bridge to imagesetters and professional printing.

Software has been promising, but not really delivering, big improvements for a few years. The consistent user interface for all applications on the Macintosh has been a big reason for Apple's success. The introduction of Microsoft's Windows 3.0 and the continuing development of OS/2 Presentation Manager will negate Apple's advantage as more application software becomes available.

There are at least four new ways in which forms applications may be affected by these developments (in addition to EDI, which is already established):

- At least some forms applications are likely to become absorbed into other applications, especially as an extension of database software; Windows and Presentation Manager in general will promote the integration of applications.
- Interleaf is promoting the concept of "active documents," which are reports (or forms) that prepare themselves; implementations of this concept may incorporate elements of artificial intelligence.
- New forms concepts may develop, e.g., "dynamic forms" in which the physical layout of the form expands or contracts to match the amount of data.
- "Multimedia" technology may be incorporated into traditional forms applications, e.g., pictures, voice annotations, or other non-traditional data may be added to forms in a few years.

Managers in corporations and other organizations are not concerned with forms per se—they are concerned with effectively managing the operations of their organizations. They have to find solutions to such problems as how to improve delivery times, reduce receivables, respond to increasing postage rates, and communicate with overseas suppliers; they need to get information to the right person at the right time. To do this, managers will look for complete computer-based solutions, not partial solutions.

Strategic Implications for Forms Manufacturers

The computer industry is changing. In part, this change is predictable and in other respects it is totally unpredictable. The business forms industry, like many others, will change in response to the computer industry. Because of the sheer size of the forms industry, the changes are likely to be more evolutionary than revolutionary. But it will be necessary to respond to and, if possible, anticipate developments in the computer industry.

Advances in computer technology are moving us toward the day that computers deal

with image data as easily as numerical data. Technology and economics are combining to create a huge increase in the number of computers which can develop or store data to be used in forms. The same technology is making possible new ways to design, produce, and process forms, and the economics are becoming more attractive.

EDI, the most sophisticated implementation of electronic forms technology using telecommunications, is growing but is not without problems. Interestingly, it may serve as a model in some ways for companies attempting to implement forms-related applications on internal, LAN-based systems.

Given the pervasive use of forms in industry, potential new market opportunities are difficult to find. But two interesting ones are possible. First, many companies are looking to the European Community and, more recently, to Eastern Europe for possible business expansion. There may be opportunities for converting forms to foreign languages, developing turnkey forms packages, or similar opportunities. Second, there is a dramatic increase in the number of home-based businesses in the U.S., which may present opportunities for forms manufacturers.

Potential new product opportunities for any manufacturer depend on the markets served, the existing product line, and numerous other factors. The technology developments addressed above suggest a number of areas which may yield potential new product opportunities for forms manufacturers:

- There may be opportunities for turnkey, LAN-based, modular forms systems.
- There may be opportunities for forms design tools, both for professional forms designers and casual designers.
- With the proliferation of forms, companies may be looking for forms management software, custom templates, or similar products to help them control the use of forms.
- There may be additional opportunities for bar code products and OCR-related products to help solve the problem of data entry.
- There may be opportunities to create joint ventures or other cooperative efforts with software developers to create and/or market forms software.
- There may be opportunities to create joint ventures or other cooperative efforts with printer manufacturers to develop and/or market nonimpact forms printers, e.g., with multipart, sequential numbering, and multicolor paper capabilities.
- Since fax is being used increasingly to transmit forms data, there may be opportunities to sell preprinted fax cover sheets or forms to manage incoming fax documents as well as to market fax paper and other fax supplies.

Finally, there may be a few potential new service-oriented opportunities:

- Organizations, especially those not in the Fortune 1000, will be looking for consulting services and training services as they move from single-user applications to networked applications; to the extent these applications are forms-related, forms manufacturers may be able to provide such services.
- Organizations will be looking to service bureaus for professional printing of materials, including business forms and promotional materials, created in-house with forms or desktop publishing software; forms manufacturers may be able to profitably offer commercial printing services.

Business forms manufacturers can also continue to sell their traditional stock and custom products but with a renewed focus on customer service. Manufacturers must always be looking for added value in the products and services they offer. Tomorrow's networked computer applications in some cases may require additional services as straightforward as supplying multiple locations on a timely basis. Improving customer service does not guarantee success, but ignoring customer service will guarantee failure.

Appendix A
Historical Statistics

Sales Data, Manifold Business Forms
Millions of Current Year Dollars At Shipment Values

	Unit Sets	Custom Continuous	Stock Continuous	Sales & Other Books	TOTAL
1958	159.6	150.4	18.8	45.2	374.0
1963	265.5	239.4	53.9	39.6	598.4
1967	361.7	391.9	98.0	44.2	895.8
1970	468.4	493.4	185.0	52.3	1,199.1
1971	486.4	518.9	190.0	47.0	1,242.3
1972	547.3	578.2	204.9	51.5	1,381.9
1973	630.2	733.7	282.1	59.8	1,705.8
1974	776.2	966.1	432.2	78.8	2,253.3
1975	781.6	944.9	413.7	78.3	2,218.5
1976	849.1	970.3	521.1	84.8	2,425.3
1977	958.1	981.1	633.9	129.5	2,702.6
1978	1,065.1	1,194.8	680.3	137.9	3,078.1
1979	1,248.7	1,466.9	891.4	154.2	3,761.2
1980	1,323.1	1,657.9	1,031.7	174.1	4,186.8
1981	1,417.2	1,823.7	1,186.5	175.7	4,603.1
1982	1,390.3	1,886.9	1,229.3	184.0	4,689.6
1983	1,250.0	2,020.0	1,305.0	260.0	4,835.0
1984	1,350.0	2,465.0	1,490.0	280.0	5,585.0
1985	1,415.0	2,650.0	1,530.0	295.0	5,890.0
1986	1,470.0	2,820.0	1,515.0	300.0	6,105.0
1987	1,563.0	3,098.0	1,628.0	331.0	6,620.0
1988	1,677.0	3,363.0	1,787.0	372.0	7,199.0
1989	1,782.0	3,621.0	1,940.0	369.0	7,712.0

APPENDIX B
IBFI ANNUAL RATIO STUDY FINANCIAL INDICATORS*
1981-1989

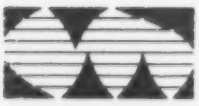
Year	Number of Partic-ipants	Gross Profit Margin			Net Income Before Tax			Return on Investment		
		All Firms	Direct	In-Direct	All Firms	Direct	In-Direct	All Firms	Direct	In-Direct
1981	75	22.7	25.2	19.3	6.4	5.9	6.9	11.0	10.6	10.2
1982	79	22.1	24.3	19.6	5.2	4.6	6.0	8.4	7.6	9.4
1983	60	24.5	28.4	20.8	6.9	6.6	6.8	10.2	9.6	9.3
1984	82	23.4	27.0	20.4	6.3	6.1	6.5	10.1	10.8	9.7
1985	97	25.2	29.2	22.6	4.9	4.7	7.6	9.8	8.5	10.6
1986	90	26.7	29.8	22.3	6.0	5.6	6.9	9.2	9.7	9.6
1987	86	29.5	35.9	22.4	8.3	9.9	6.8	12.2	14.4	9.4
1988	77	26.3	29.7	21.4	6.5	6.4	6.4	9.4	9.9	8.6
1989	75	27.3	31.1	20.5	5.0	5.5	3.8	8.2	9.4	5.8

Direct: Firms with at least 60% of sales volume made through a direct sales force.

Indirect: Firms with at least 60% of sales volume made through distributors or dealers

Source: IBFI Annual Ratio Study

*NOTE: The IBFI *Ratio Study* is an annual survey of Income Statement and Balance Sheet information from a sample of North American forms manufacturing IBFI members. The composition of the sample is not 100 percent consistent from year-to-year; readers are cautioned not to extrapolate directly from these results to the entire forms industry.



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